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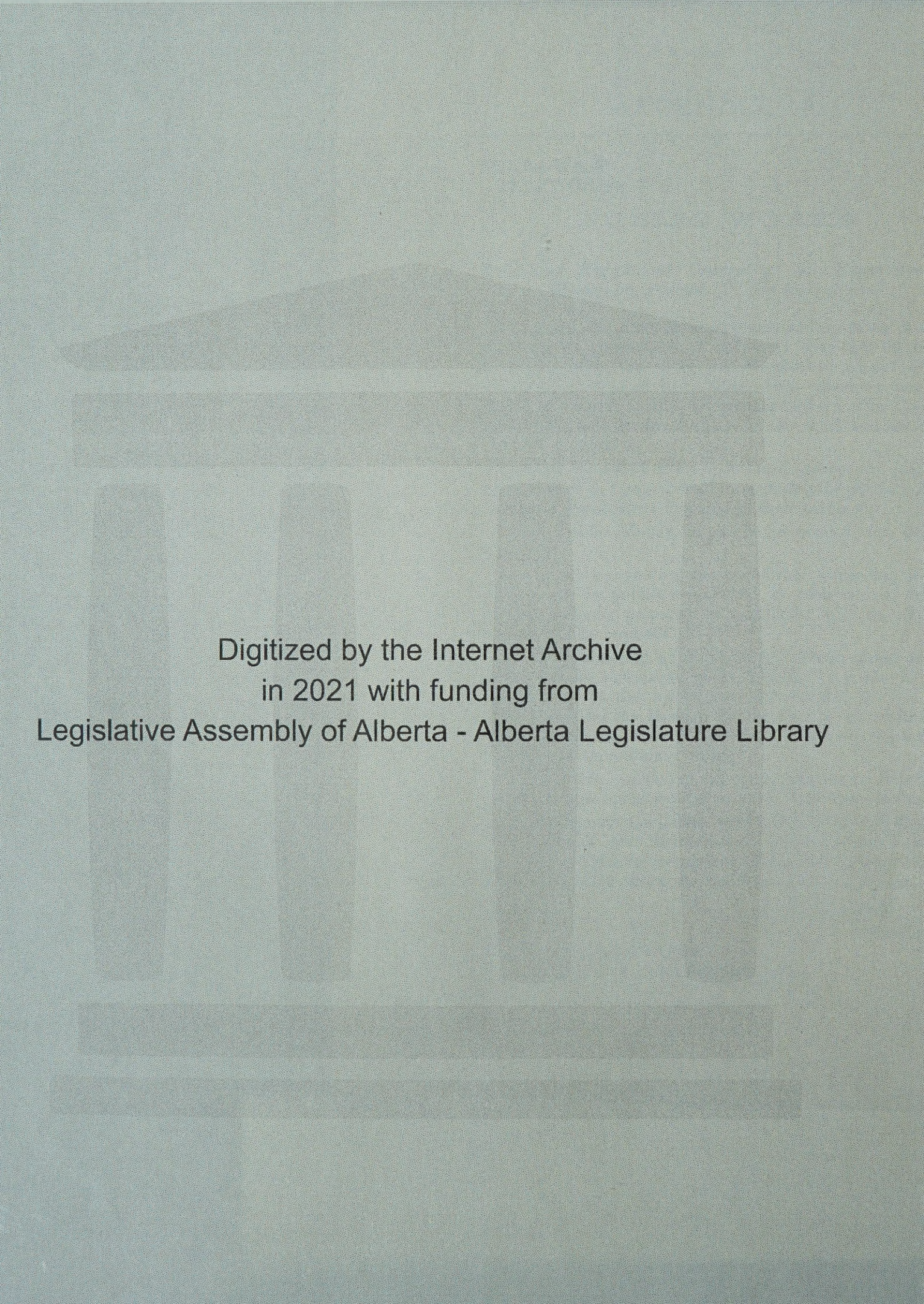
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ANNUAL REPORT

OF THE

DEPARTMENT OF PUBLIC WORKS

NORTH-WEST TERRITORIES

FOR THE YEAR

1898



REGINA

JOHN ALEXANDER REID, Queen's Printer for the Territories

1899

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DEPARTMENT OF PUBLIC WORKS,
Regina, March 1st, 1899.

TO HIS HONOUR*

AMEDEE EMMANUEL FORGET,

Lieutenant Governor of the North-West Territories.

SIR—

I have the honour to transmit herewith the Annual Report of the
Department of Public Works for the year 1898.

I have the honour to be, Sir,

Your obedient servant,

J. H. ROSS,

Commissioner of Public Works.

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DEPARTMENT OF PUBLIC WORKS,

Regina, Assiniboia,

January 2nd, 1899.

JAMES H. ROSS, Esq., M.L.A.,

Commissioner of Public Works,

Regina, Assa.

SIR,—

I have the honour to submit the Annual Report of the Department of Public Works for the year 1898, required by section 26 of The Public Works Ordinance.

This being the first report issued since the organisation of the Department it is thought desirable, for purposes of future reference, to make it as full as possible and to provide, in addition to the necessary information regarding the work of the Department proper, some connected record of the public works previously completed under the direction of His Honour the Lieutenant Governor and the Executive Committee respectively. The report must therefore necessarily cover a much longer period than the fiscal year which has just closed, and it has been prepared so as to deal first, in the form of a general narrative report, with the public works completed within the Territories since they were controlled in any sense by Territorial authority; and, secondly, to treat more specifically of these works since the organisation of a distinct Department of Public Works. A report containing this information must of necessity be somewhat voluminous, but it is thought that the questions dealt with are of sufficient interest to the residents of the Territories to warrant their being discussed fully and at some length.

From the time of the appointment of the first Lieutenant Governor for the Territories in 1877 down to the year 1892 the bridges, road improvements, ferries, surveys and other works of a distinctly public character were carried out under the personal direction of the Lieutenant Governor as agent for the Department of the Interior, through which Department the affairs of the Territories were then administered. During this interval the works undertaken were, generally speaking, of a light and inexpensive character suited to the requirements of the then sparsely settled condition of the country, but in some few instances more important works, such as bridges over the Souris and Qu'Appelle Rivers in the eastern portions of the Territories, and over High River, Battle River and the Blindman River in the west, as well as ferries on many of the larger streams, were completed. Unfortunately nothing in the shape of a continued record of the public works completed during this period seems to have been kept, and, with the exception of two reports regarding this subject, addressed during the years 1888 and 1890 to the Lieutenant Governor by the late Mr. Thomas Brown, who had charge of that branch of the work in the Lieutenant Governor's office, there is no published record which can be referred to for information relative to the works completed. The facts relating to bridges, culverts, dams, ferries, surveys and other public works completed during this interval, as far as we have been able to gather them from these published reports, and from the papers turned over to the Department from the Lieutenant Governor's office at the time of the organisation of the Department, are dealt with in schedule form further on in this report.

In the year 1892, as above mentioned, a change in the method of administering the public works and other Territorial expenditure was made, this change being the result of the acquisition by the Legislative Assembly of the right to control the expenditure of the Territorial revenue and apportion it to meet the different Territorial needs. Under this change the Territorial expenditure was administered through the Executive Committee of the Assembly, but as there was no distinct branch created to undertake the administration of necessary expenditure under the head of public works, an arrangement was entered into under which the sum available each year for public works, or other needs of a public character, was equally divided between the electoral districts in the Territories and these sums expended through the local members of the Legislative Assembly. This system had the merit of cheapness in that there was a saving of the cost of technical supervision of the expenditure on the work, the services of the local members in letting the works and superintending their completion and inspection being given without remuneration, and at the time of its inception the arrangement, owing to the comparatively small sum there was to spend, was probably the best which could have been adopted. It had, however, many grave objections. In the first place it provided for an equal expenditure for public works in all electoral districts, which was manifestly unsuited to existing conditions. Some of the districts were found to be broken by large rivers and other natural features requiring considerable expenditure to provide necessary bridges, and these districts, being given the same amount as districts which, owing to their situation and topographical features, required very little outlay except for some road grading or other inexpensive work, were unable to provide these necessary works. There was also the further grave objection that the expenditure of public money through the local members was fraught with the danger of misappropriation for political ends, and although it speaks well for the personal integrity of the members of the Legislative Assembly during the time this system was in force, to be able to say that very few instances of this kind occurred, the two or three cases which did occur, together with the evidence adduced of unwise and unnecessary expenditure in some districts, and the increase in the demand for works which could not be undertaken under this system, soon proved the weakness of that method of expending public money.

In consequence of these facts it was decided by the Executive Committee, in 1897, to create a distinct Public Works Branch and to do away with the system of equal allotment of the amount available for public works among the electoral districts. This Public Works Branch was to be headed by qualified technical officials and to be charged with the expenditure of the amounts available for public works in completing such works where needed, without special reference to the boundaries of electoral subdivisions. This new system was brought into force by the appointment of the writer as Chief Engineer for the Territories on July 1st, 1897, together with the necessary clerks at headquarters and an outside staff of Surveyors and Engineers. Up to the time of the organisation, in October of that year, of the Department of Public Works as one of the Departments of the newly-created Territorial public service, the public works of the Territories were carried on through this Branch. When the Department was organised the writer was appointed Deputy Commissioner of Public Works and certain changes, dealt with in detail further on, in the staff and system in force in the Public Works Branch, were brought into effect.

To provide for proper continuity in the more distinctly narrative portion of this report it will probably be well before dealing with the work since the organisation of the Department to devote some space to an explanation of the system adopted at the time of the creation of the Public Works Branch for a proper supervision of the public works undertaken, and to indicate the changes made in this system since the organisation of the Department, and in the staff appointed to carry out the work.

When the Public Works Branch was organised there was, as has already been indicated, no particular staff at headquarters charged with the administration of the sums set aside for these works. One of the members of the Executive Committee gave that portion of the work of the Committee special attention, aided by a staff of one or two clerks, but there was necessarily very little opportunity to deal with the work under proper office administration or record, and as a consequence much trouble resulted in getting a proper understanding of what had been done when the distinct branch was organised. There was also a complete want of any outside staff through whom work should be carried on, this part of the work, as has been explained, having been previously dealt with through the local members.

The first step taken after the creation of the Public Works Branch was the organisation of a proper headquarters and outside staff to administer and supervise the operations of the Branch, and in dealing with the question certain limiting conditions rendered the matter difficult of settlement. In the first place the total sum which was likely to be available during any one year for public works was expected, for some years at least, to be limited, and a large and expensive staff at headquarters, and of Engineers throughout the Territories, would involve an expenditure for the staff out of proportion to the amount to be expended on public works.

These considerations led to the adoption of a system under which the Branch was provided with what was thought would be a sufficiently strong staff of clerks at headquarters to enable the administrative work to be thoroughly systematised and kept up, and would provide a qualified outside staff to ensure proper technical supervision being given public works, and also provide for the completion of such surveys as might be required. Under this system the Territories were divided into seven public works districts, viz.: Edmonton, Calgary, Macleod, Regina, Qu'Appelle, Prince Albert and Battleford, and District Engineers and Surveyors were appointed for each of these districts except Regina, which, it was expected, could be looked after from headquarters. In subdividing the Territories in this way, and making these appointments, it was expected that the required information could be obtained through the District Engineers as to the location and character of works of a public character which were needed, and that the necessary technical supervision could be given the completion of these works by them without involving too great an expenditure for such supervision and inspection.

The District Engineers and Surveyors were not appointed as salaried officials of the Branch but were to be paid under a defined schedule of fees for services and expenses while employed from time to time under instructions issued to them. Local men were appointed in each of the districts and it was hoped that their local knowledge, added to the information obtained in travelling about their districts, would enable them to advise intelligently as to the requirements of their districts in the way

of public works and report upon any applications received for the completion of specific work.

The public works of the Territories completed during the fiscal year which ended on the 31st of August, 1897, as well as those provided for during the fiscal year covering the period from that date to the close of the calendar year just ended were, with some slight modifications referred to later on, carried on under the system above outlined.

On the whole this system was found to work satisfactorily. In some districts, however, the press of work was greater than could be promptly and efficiently handled by the District Engineer, and owing to his frequent absences for considerable periods from his office while engaged in making surveys, serious delays occurred in dealing with some of the items of public works for which provision had been made in the current estimates. To assist in overcoming this difficulty it was decided in the spring of last year to increase the outside staff of the Department by appointing competent men in different parts of the Territories as Local Inspectors to whom instructions could be sent to inspect works that had been completed, and thus relieve the congestion in some of the District Engineers' offices. This addition to the staff, however, only removed a portion of the difficulty as it was found that the necessity of dealing direct with the Local Inspectors added so materially to the correspondence at headquarters that we were unable, with the limited staff, to properly attend to this mass of correspondence and at the same time examine and properly record the plans and specifications for public works submitted by District Engineers, or the returns of surveys made by them, and in consequence our work fell very much into arrears, and certain annoying but unavoidable delays occurred in getting the season's work commenced.

These conditions led, in the fall of the past year, to a careful consideration of the system and the necessary changes required to make it more complete and workable. It was finally decided to do away with the offices of District Engineers and Surveyors and to increase the departmental staff by the appointment of an Assistant Chief Surveyor and an Assistant Chief Engineer. This change came into force with the beginning of the present year, Mr. R. C. Laurie, D.L.S., who had previously filled the positions of District Engineer and Surveyor for the Battleford and Macleod Districts, being appointed Assistant Chief Surveyor, and Mr. J. T. Child, C.E., Assistant Chief Engineer, both with headquarters at Regina.

In connection with this change in the system, and the appointment of the gentlemen referred to, I may say that to obviate the difficulties above mentioned it is intended in future to carry on our public works somewhat in the following manner:

All plans and specifications for public works will be prepared at headquarters and the contracts or instructions for these works, as the case may be, issued direct from the Department. The inspection of the work after completion will be made by the Local Inspector living nearest to the work, the staff of Local Inspectors being so increased that there will not be any great distance to travel in each particular case to complete the inspection. The Assistant Chief Engineer will, during the summer months, visit the different parts of the Territories to obtain the required information to enable proper plans and specifications for necessary works to be prepared, and in this way we will be able to keep proper track and record of the work, provide for a uniform style of structures throughout the Territories, and see that the immediate neces-

sities in the way of public works in each portion of the country are provided for.

In completing the grading of roads or smaller public works it is intended to extend the system, inaugurated during the past year, of doing as much of this work as possible through the Overseers of the Local Improvement Districts. We will have some 450 of these districts in operation this year, and the Overseers will constitute a good staff of foremen to carry out works of this character. This feature of our public works administration will be found more fully dealt with in the section of this report dealing with Local Improvement Districts.

The adoption of the new system will, it is expected, enable us to deal more promptly and efficiently with public works as they are from time to time provided for by legislative appropriation, and will also result in a considerable saving in the cost of the inspection and superintendence of the work over the amount paid for this service under the old system. For the purpose of future reference a statement is given of the cost of the inspection and superintendence of public works during the past fiscal year under the old system of dealing with these works:

Amount expended during past fiscal year on construction of public works	\$129,046 00
Amount paid for inspection of public works	5,908 68
Percentage of cost of public works paid for inspection	4 $\frac{3}{4}$ %
Amount expended during fiscal year for construction of bridges	47,672 00
Amount paid for preparation of plans and specifications and superintendence of construction .	1,676 29
Percentage of cost of bridges paid for superintendence	3 $\frac{1}{2}$ %

The foregoing statement indicates that under our old system the percentage of cost of public works for inspection of the same amounted to 4 $\frac{3}{4}$ per cent., and for preparation of plans and specifications of works and superintendence of construction 3 $\frac{1}{2}$ per cent., and while these charges are certainly not excessive it is expected, as already indicated, that under the new system adopted the percentage of cost for these services will be somewhat reduced.

It is intended that the Chief Assistant Surveyor shall in future have charge of the examination and record of all returns of surveys, roads, trails and reservoirs, and that he shall in addition, during the summer months, make such surveys as he can undertake without allowing the office work to fall into arrears. The surveys which cannot be undertaken by the Assistant Chief Surveyor will be performed by the gentlemen who lately filled the positions of District Engineers and Surveyors, or by some other local Dominion Land Surveyor residing in the vicinity of surveys required. The importance of this branch of our departmental work, and the serious difficulties which have arisen owing to want of proper supervision in the past of surveys made for the Territorial Government, will be found more fully dealt with in the section of this report relating to surveys.

Having dealt thus briefly with the narrative portion of this report relating to the subject of public works in the Territories and their administration under the different authorities charged with their com-

pletion since the organisation of the Territories, I now proceed to deal in detail with the work delegated to this Department and completed since its organisation.

When the several Departments of the Territorial Public Service were organised in October of 1897 the administration of the following Territorial Ordinances was delegated to the Department of Public Works :

The Public Works Ordinance,
The Local Improvement District Ordinance,
The Coal Mining Ordinance,
The Irrigation District Ordinance,
The Ferries Ordinance,
The Expropriation Ordinance,

and to this list the following were subsequently added :

The Steam Boilers Ordinance,
The Village Ordinance.

For convenience of reference it is proposed to deal with the work which has arisen under each of these Ordinances in a separate section of this report, but before doing so the general departmental work in dealing with them as a whole during the past fiscal year may be summarised as follows :

Number of letters received, recorded and attached to proper files	10,652
Number of letters sent, and copies attached to proper files	13,606
Number of mimeograph copies of circular letters and instructions sent	10,000
Total amount voted for public works during year and dealt with through departmental books .	\$197,385 81
Number of accounts received, audited, properly posted in departmental books and forwarded for payment	2,595
Amounts collected from various sources as Departmental revenue, properly posted through cash book and paid to general revenue account	4,597 06
Local Improvement Districts dealt with—	
Districts organised during year	356
Annual returns from districts received, audited, posted, payment of grants made	268
Total number of districts organised up to end of year which have been dealt with	414
Number of items in main and supplementary estimates for public works	882
Items dealt with and completed	801
Number of contracts drawn	336
Number of plans for public works prepared	155
Number of specifications prepared	160

Plans, field notes and specifications of surveys and public works examined, numbered and recorded:	
Plans	509
Field notes	21
Specifications	456
Descriptions	62
Surveys	349
Coal mines inspected and inspectors' reports and recommendations acted on	24
Coal mines managers' certificates issued	6
Coal mines pit boss certificates issued	7
Coal mines fire boss certificates issued	5
Steam boilers inspected	48
Engineers' certificates issued	162
Fees collected (for inspection) . . . \$235	
" (for certificates) . . . 486	\$ 721 00
Ferries licensed and operated during the year	20
Applications to close road allowances or surveyed highways received and dealt with	79
Villages dealt with—	
Returns from old villages	10
New villages organised	10
Organisation of new villages commenced and petitions against received	13
Irrigation Branch:	
Applications for right to construct irrigation works on road allowances received, recorded and dealt with	127
Applications for water rights for reservoirs created by dams constructed by Territorial Government filed under provision of the Irrigation Act, with accompanying memorials and plans.	63
Number of letters received, recorded and attached to proper files	1,436
Number of letters sent	1,783
Number of applications for water rights received and recorded	98
Number of plans filed in connection with applications examined and recorded	120
Number of memorials in connection with applications received and recorded	90
Mimigraph copies of forms and returns prepared and sent out	2,000

The information regarding the organisation of the Irrigation Branch of the department and the special work delegated to that branch will be found fully set forth in a separate section of this report.

The inside staff of the department, in addition to the deputy head, during the past fiscal year, through whom the above departmental work has been carried out, was as follows:

- 1 chief clerk,
- 1 accountant clerk,

- 1 clerk in charge of Irrigation Branch,
- 1 correspondence clerk,
- 2 stenographers and typewriters.

Considering the mass of work which has been dealt with as outlined above it may, I think, be safely said that the Department has not been over-manned in the way of staff, and I may add that only by faithful work, covering extra hours during the day, and night work for many months in the year, has the staff been able to keep up with the work on hand.

In dealing in a detailed manner with the work devolving upon the Department in connection with the administration of the Ordinances above referred to, it is proper that the first reference should be to

THE PUBLIC WORKS ORDINANCE.

The Public Works Ordinance was passed at the session of the Legislative Assembly held in November, 1897. Prior to that date there had been no special Territorial enactment relating to public works.

In administering this Ordinance public work has been carried out under the following headings: Maintenance of the legislative and departmental buildings and grounds, maintenance and rent of normal school buildings, construction of bridges, repairs of public works, construction of culverts, surveys, purchase of and repairs to tools and implements, construction of dams to form reservoirs for storage of water, ferry accommodation, boring and testing for water and providing public wells, providing fireguards, clearing, grading and improving roads. These different classes of work are dealt with herein under separate heads, as the importance of some of them necessitates extended remarks.

MAINTAINING LEGISLATIVE AND DEPARTMENTAL BUILDINGS AND GROUNDS.

The present legislative and departmental buildings at Regina were constructed to meet the requirements when the Legislative Assembly contained only a small number of members, and all the administrative work was carried out through the office of the Executive Committee with a staff of half a dozen officials. With the increase in the membership of the Legislative Assembly, and the formation of six administrative departments of the Territorial Public Service, the accommodation which the present buildings afford has proved quite inadequate and in several of the departments many of the offices are seriously overcrowded. The legislative building may, to use a western expression, be termed little better than a "shack." It was originally a one-story building which has since been brick-veneered and patched and added to from time to time to meet emergencies as they arose. It is totally devoid of any of the simple conveniences or appliances for heating which are necessary in this cold climate, and the legislative chamber is so small and inconvenient that it is almost impossible to provide seating space for the thirty-one members now constituting the Assembly, and certainly each member will fall far short of obtaining the amount of air for breathing purposes which sanitary science considers as being requisite in a building.

When the offices of the Indian Department were removed from Regina in July of 1897, we took possession of the building which had been occupied by them, and which constitutes one of the group of three

buildings in which the Legislative Assembly and departments are now quartered. When taken over this building was found to be in a very bad state of repair, and owing to its peculiar architectural features it is very poorly suited for public offices. The Departments of Public Works, Agriculture and Territorial Secretary, including the Library, are now situated in this building: the Departments of the Attorney General, Treasury and Education being located in the building erected some years ago as quarters for the offices of the Executive Committee.

During the past fiscal year a considerable sum was spent in repairing and improving both the legislative and departmental buildings so as to make them more comfortable and suited to present requirements. These sums have been repaid to the Territorial Government by the Dominion Department of Public Works, but the present over-crowded condition of both the legislative and departmental buildings, and the fact that an almost unlimited expenditure for repairs or alterations would not make them altogether suitable for present requirements, leads to the conclusion that in the near future consideration will have to be given to the question of providing buildings of modern design and construction and suited to the rapidly increasing needs of both the Legislative Assembly and the departments of the Territorial Public Service.

During the year an effort was made to improve the appearance of the grounds surrounding the buildings by grading the roads and constructing necessary sidewalks, and a good deal of attention was also given to the cultivation of trees and flowers. In the latter connection it may be pointed out that success in the growth of trees, flowers or grass is seriously hampered by an insufficient water supply, and before any marked improvement in these matters can be looked for the present water supply must be largely increased.

MAINTENANCE AND RENT OF NORMAL SCHOOL BUILDINGS.

The providing and maintaining suitable quarters for the normal schools in the Territories is one of the duties delegated to the Department of Public Works. So far the only points at which accommodation of this kind have been required are Regina and Edmonton. At the first mentioned point an arrangement was made in 1896 by the Executive Committee with the Public School Trustees under which quarters were provided for the normal school classes in a new public school building erected shortly before that date. This arrangement covered a term of three years from the date mentioned, the consideration being the sum of \$1,050, which was paid towards the completion of some of the unfurnished rooms in the school building. In addition the Territorial Government provide a caretaker for the portion of the building allotted to the normal school classes and furnish fuel and light for that portion of the building. Under this arrangement comfortable and suitable quarters were provided for the normal school sessions at Regina which, up to this date, have proved sufficiently commodious. Owing, however, to the rapid increase in number of those attending the classes the rooms have been somewhat overcrowded during the late session and in view of this fact, and also as the agreement above referred to terminates next spring, consideration will have to be given this year to providing more accommodation for this branch of the Educational Department. It is possible that a further arrangement can be made with the Public School Trustees for a renewal of the terms under which we occupy the rooms mentioned and to provide additional accommodation in a portion of the school

building not at present in use. But the question of providing a suitable permanent building for the normal school at Regina, or such other central point as may be selected, must be faced in the near future.

In the western portion of the Territories normal school sessions have been held during the past two winters at Edmonton. At that point quarters for the classes have been provided by renting rooms during the few months the classes were in session, but this arrangement is necessarily of the most temporary character, and no doubt the increase in membership of the classes will necessitate some more permanent quarters being provided either at Edmonton or Calgary.

The question of the possibility of providing in the near future, from the present limited amount available each year for public works, the expensive buildings which will be required for normal school purposes in the Territories is deserving of some consideration, and it is respectfully submitted that, with the rapidly increasing demands for expenditure for roads, bridges, surveys and other important public works which will each year exhaust all the amount available for public works, the time has come when an effort should be made to complete arrangements by which a portion of the land endowment in the Territories for educational purposes should be set aside to provide these normal school buildings.

CONSTRUCTION OF BRIDGES.

The most distinctively public work which the Department is called upon to undertake is the construction of bridges, and a very considerable portion of the amount set aside for public works during the past fiscal year, as well as of the amounts previously expended, has been devoted to the completion of structures of this character.

The schedule given farther on shows the number and location of the bridges constructed within the Territories as Territorial public works up to this date. This schedule is complete in so far as it relates to bridges constructed since the organisation of the Public Works Branch and Department of Public Works respectively, but is very incomplete as concerning bridges previously constructed, numerous bridges having been built by members of the Legislative Assembly under the old system of district grants of which we have no direct record but of which we hear indirectly from time to time.

The construction of bridges is one of the classes of public work that particularly requires technical supervision, not only in designing the structures but in superintending their erection. Owing to a lack of this technical supervision under the old system of carrying on the public works it is not surprising to find that some of the bridges which were erected during that time are poor structures and cost much more than they would have done had they been properly designed. This statement may be illustrated by the fact that certain of the larger bridges, erected under the old system at a cost of from \$3,000 to \$4,000, each could to-day be replaced by properly designed and constructed bridges at a cost of from \$2,000 to \$3,000, and this great difference in cost is certainly not altogether due to any marked reduction in the cost of labour or material in the Territories, but is attributable to the unsuitability of the structures erected and the want of proper technical superintendence of their construction.

Up to the time of the organisation of the Public Works Branch all the bridges, with one exception, which had been erected as Territorial public works were wooden structures. Some of them, such as bridges

over the Qu'Appelle River, Souris River, High River, Bow River, Elbow River, Red Deer River, Sturgeon River and other of the larger streams were bridges of one or more truss spans, and cost, as has been indicated, comparatively large sums. As might be expected from the system in force at the time of their erection, these larger bridges, as well as the smaller ones, are of all kinds of design. In some cases they contain an excessive amount of material for the loads they have to carry, while in others the limit of safety was stretched in designing the structures, and as a consequence large sums have had to be subsequently spent in making the bridges of this character safe.

This want of uniformity in the designs of our bridges was not entirely overcome at the time of the organisation of the Public Works Branch by the appointment of District Engineers. Six or seven engineers naturally have somewhat different ideas of the style of structure best suited for any particular site where a bridge was needed, and although an effort was made to overcome this difficulty by issuing a General Manual of Instructions for the Guidance of District Engineers, which contained certain limiting conditions regarding designs for bridges, we have been unable, owing to the lack of technical assistance at headquarters already referred to, to obtain that uniformity in the design of our bridges that is desirable.

One of the principal improvements that we hope to accomplish by the change in the system of completing future public works is uniformity in the design of bridges, this result being possible owing to the fact that all the bridges will be designed in the department. This uniformity will permit of a very material saving in the cost of designing the smaller bridges as we will have one standard design for the superstructure for all bridges of from ten to twenty feet spans with standard substructures of the different kinds required by local conditions, and when a bridge of these dimensions is required we can at once, knowing the length of span and style and height of substructure needed, make blue print copies of these standard plans for use in constructing the bridge, at a cost of some few cents instead of having to pay an engineer from ten to fifteen dollars for a special design and specification. We inaugurated this system in completing the smaller bridges provided for in the supplementary estimates passed at the last session of the Legislative Assembly and found it to work satisfactorily, and it is certain that with some further consideration of the standard designs then prepared we will be able to provide for all the smaller bridges needed in the future at a very small expense in so far as cost of plans and specifications is concerned.

Special plans will still, of course, have to be prepared for the larger bridges which may be erected, but even in these cases something like uniformity of design may be accomplished, particularly if it is found possible to extend the system commenced during the past year of putting in steel superstructures for the larger bridges instead of wooden structures as had previously been done.

The great strides which have been made during the past few years in the methods of manufacturing steel bridges and the marked reduction in the cost of these bridges, owing to keen competition among the bridge building firms, renders it possible to now erect bridges with steel superstructures for very little more than wooden structures would cost. In view of these facts I recommended to you a year ago that as far as possible the larger bridges provided for in the current estimates should have steel superstructures, and this recommendation having been approved it has been carried out in the following cases :

Bridge over the South Fork of the Old Man's River. Two steel spans of 102 feet each.

Bridge over High River at Thompson's Crossing. Two steel spans of 112 feet 7 inches each.

Bridge over Kootenay River at Pace's Crossing, Stand Off. Two steel spans of 110 feet each.

Bridge over Cascade River at Anthracite. One steel span of 90 feet.

Bridge over Ross Creek at Medicine Hat. One steel span of 70 feet.

Bridge over Willow Creek near Macleod. One steel span of 50 feet.

Bridge over Maple Creek at Maple Creek village. One steel span of 60 feet.

Bridge over Qu'Appelle River at Craven. One steel span of 80 feet.

Bridge over Qu'Appelle River at Blackwood Crossing near Indian Head. One steel span of 86 feet.

Bridge over Qu'Appelle River at Ross Crossing. One steel span of 60 feet.

Bridge over Souris River near Glenewen. One steel span of 60 feet.

The substructures for all the foregoing bridges consist of pile or framed piers which in the ordinary course of events will last from ten to fifteen years, and so soon as they begin to show evidence of decay they can be replaced by concrete piers, without interfering with traffic, and thus provide a permanent and lasting structure, having a life of usefulness of from twenty-five to forty years.

To illustrate the advantage which has accrued from the adoption of the system of putting in steel instead of wooden bridges at the above mentioned points, a comparison of the cost of steel and wooden structures at a few of the points mentioned may be of interest.

The steel bridge erected over the Qu'Appelle River at Ross Crossing cost complete \$1,049. This bridge, as already stated, comprises a 60 ft steel span on pile piers. During the past year we erected a wooden bridge, also on pile foundations, at Klyne's Crossing of the same stream, about four miles from the Ross bridge. The wooden bridge cost \$691.81 as compared with a cost of \$1,049 for the one with the steel superstructure.

The bridge with steel superstructure across the Qu'Appelle River at Blackwood Crossing cost \$1,737.36. This bridge was erected to take the place of a wooden bridge at that point erected many years ago at a cost of some \$3,500, and a new wooden bridge would have cost at least \$1,500. The steel bridge was therefore provided at a very much less cost than the cost of the original structure, and for only a small amount more than a new wooden bridge would have cost.

The steel bridge of two spans erected over the High River at Thompson's crossing cost \$4,610.98. This bridge was also provided to replace a wooden structure erected at that point in 1890 at a cost of \$3,042, which had been carried away during the floods of 1897. A new wooden bridge at this point of a more suitable design than the one originally erected would have cost at least \$3,800, and we have thus been able to provide a permanent steel bridge for about \$800 more than a wooden structure.

The bridge erected over the Kootenay River at Pace's Crossing will cost completed \$6,600. A wooden Howe truss bridge at this point would have cost, judging from the cost of other bridges of this character erected in the vicinity, about \$6,000, so that in this instance we have been able to provide a steel bridge at about the cost of a wooden one.

A consideration of the foregoing figures leads to the conclusion that in the case of small bridges of from 50 to 70 feet span the cost of steel structures is somewhat in excess of wooden bridges, but as the spans increase the difference in cost decreases, and under present conditions it is quite probable that all the larger bridges can be provided with steel superstructures at very little, if any, greater cost than wooden spans.

The more permanent character of the bridges having steel superstructures is of course self evident and has already been referred to. The serious condition resulting from the large annual expenditure required to keep wooden bridges in repair is more fully dealt with under the heading of Repairs to Public Works.

The bridges constructed during the past fiscal year are noted in the accompanying schedule by giving the date of construction, but the importance and volume of this branch of our departmental work during that period will be better understood from the statement that some 94 bridges were constructed at an expenditure of \$47,739.72. The completion of these bridges necessitated the preparation of a large number of plans and specifications and the letting of necessary contracts, and where bridges were constructed by day labour the foreman had in many cases, in addition to the plan and specification, to be given written instructions with bills of quantities.

SCHEDULE OF BRIDGES CONSTRUCTED AS TERRITORIAL PUBLIC WORKS IN THE
NORTH-WEST TERRITORIES.

NAME OF STREAM.	LOCAL NAME OF CROSSING, IF ANY.	LOCATION.				WHEN CONSTRUCTED.
		1/4 SEC.	SEC.	TP.	RG.	M.
Antler creek	On trail, Carnduff-Carievale		2	8, 9	1	2
" (south branch)	On trail, Winlaw-Workman		22	3	32	1
" "	Near Alameda		7, 12	3	31	1
" (north branch)	Calgary-Edmonton road		32, 33	2	32, 33	1
" "	At Laboucanne Settlement		16, 17	3	30	1
Battle river, Alta.	At Battleford				30	1
" "	Wetaskiwin-Red Deer lake road		25	45	23	4
" "	At Battleford					
Beaver creek, Assa.	Moose Jaw-Saskatoon road		16, 17	16	30	1
" "	Chappelle crossing					
" "	Regina-Saskatoon road		3, 10	16	30	1
Beaver creek, Alta.	North of Fleming		33	55	19	4
" "	Battleford-Edmonton road			55, 56	19	4
Beaver creek, Sask.	Battleford-Saskatoon road		15	39	11	3
Big Arm creek	Moose Jaw-Saskatoon road	N.W.	10	25		
Blackmud river	Calgary-Edmonton road					
Blind Man's river	Bow River trail, south of Edmonton					
Boggy creek, Assa.	Calgary-Edmonton road					
" "	Road from Bluffs to Regina		11, 12	18	19	2
" "	At McCallum's		15, 16	18	19	2
" "	At Purdy's		7	19	20	2
" "	Davis' crossing, Albert St. crossing.		{ 19	18	19	2
" "	Near junction, Qu'Appelle river.		24	18	20	2
" "	At Cullum's		34	19	21	2
" "	At Anticknapp's, Regina, Hedgesford road		32, 33	18	20	2
" "	Near Saltcoats		14, 15	18	19	2
" "			16, 17	27	2	2
						Repaired 1898

	At Morley					Repaired 1898
"	At Mitford					
Bull's creek	Westerley crossing, No. 1				26	2
Cascade river, Alta.	West of Breakwater, Banff					1898
"	Old Channel, Anthracite					1897, temporary
"	1 mile east of Anthracite					Repaired 1898
Carrot creek, Alta.	Near Big lake, St. Albert Settlement					1891
Coal creek, Alta.	Calgary-Morley trail			24	26	1898
"				2	27	5
Coal Lake creek, Alta.						
Cooper creek, Sask.	Battleford-Saskatoon road	N.E.		9	42	3
"	Road, Battleford-Red Pheasant Reserve			10	42	3
Cottonwood creek	On township line			1, 36	17, 16	2
Craig's creek, Sask.	Battleford-Saskatoon road	N.E.		3	43	3
Creek, Assa.		S.E.		20	19	2
"				35, 36	23	2
"				7	18	2
"					12	2
"					12	2
"					7, 8	2
"				6, 31	25, 26	3
"		E.		26	15	2
"				2, 3	17	2
"				33, 34	16	2
"				9	21	2
"				15, 22	46	2
"				31, 32	46	2
"					45	2
"	Opposite Boucher P.O.			20	27	2
"	1st E. of 8 Mile creek, Battleford-Saskatoon rd	N.W.		42	15	3
"	2nd E. of 8 Mile creek			20	42	3
"	3rd "			20	42	3
"	4th "			20	42	3
"	Carlton-Prince Albert road				46	2
"	East boundary			33	46	2
"	West boundary			33	46	2
"	North boundary			3	47	2
"	S.E. corner H.B. Co.'s Reserve, Prince Albert					1898
"	1st Creek E. of 14 Mile creek	s.w.		2	42	3
"	Two bridges on road at Ferry Hill, Battleford, at foot of Miller's Hill.					Repaired 1898
"	Edmonton-Fort Saskatchewan			35	52	1897
"	Half-mile from Fort Saskatchewan			35	54	4
"	River road across river lots 19 to 23, Edmonton Settlement					Repaired 1898
"						1898

SCHEDULE OF BRIDGES CONSTRUCTED AS TERRITORIAL PUBLIC WORKS IN THE
NORTH-WEST TERRITORIES.—*Continued.*

NAME OF STREAM.	LOCAL NAME OF CROSSING, IF ANY.	LOCATION.				WHEN CONSTRUCTED.
		¼ SEC.	SEC.	TP.	RG.	M.
Creek, Alta.	River lot 1, Edmonton Settlement		4, 32	55, 54	21	4
"	Two small bridges between		3, 4	53	23	4
"	Four small bridges in			55	24	4
"			8, 17	35	28	4
"	E.		5	56	19	4
"	N.		8	41	21	4
"	N.		22	52	25	4
"	S.E.		26			Repaired 1898
"	N.E.		23	52	1	5
"	River lot A., St. Albert Settlement					
"	On Fort Saskatchewan river road, R. lot 30.					1898
"	Springvale-Penhold road		27, 28	37	27	4
"	N. side Sheep creek		12	21	3	5
"	Near Colles P.O.	N.W.	20	2	24	4
"	Macleod-Stand Off road					1897
"	At Gleichen		7, 18	22	22	4
"	Road leading E. from Red Deer, S. side Red Deer river					1898
"			21, 22	52	25	4
"	McLaggan's, C. & E. Road, two bridges.		36, 6	54, 55	21, 22	4
"			20, 29	51	24	4
"	1½ mile E. of Anthracite.	S.E.	8	22	1	5
"	"Doze" Bridge					Repaired 1898
"	River Lot 30, Halcro Settlement		34, 33	26, 27	5	2
"	At Peace's		29	26	5	2
"	Yorkton-Windsor road		1	27	7	2
"	Taylor bridge		32	27	4	2
"	At Icelandic crossing			18	31	1
"	At Harrison's		5, 8	19	31	1
"	At Smith's		24, 25	21	1	2
"	At Clumber		10, 15	22	1	2
Cromarthy's creek, Sask.						1897
Cussed creek, Assa.						Repaired 1898
"						1897
"						1898
Cut Arm creek, Assa.						1897
"						1898
"						1897
"						1897

	At Riddall's	17, 20	20	1	1897
Cut Arm creek, Assa.	At Parker's crossing				
" "	9 miles E. of Fort Saskatchewan	16	55	21	1898
Deep creek, Alta.	Lowrie's bridge				Reconstructed 1898
Dog creek, Alta.		6	53	27	Rebuilt 1897
Ducharmes creek, Sask.	S.	16	43	16	3
Eagle creek, Sask. (tributary of)	S.E.	5	39	10	3
Ebels creek, Assa.		11, 14	30	9	2
Elbow creek, Assa.	N.W.	30	41	14	3
Eighteen Mile creek, Sask.	On Battleford-Saskatoon road				1895
Eight Mile creek, Sask.	Mission or Dewdney bridge, Calgary.				B't 1887 rep'd 1898
Elbow river, Alta.	Barracks bridge, Calgary				Reconstructed 1897
" "	Main stream	4, 5	24	2	Rebuilt 1898
" "	Old Channel	4, 5	24	2	1898
Etormann creek, Assa.	1st bridge W. of Fort Pelly				
" "	2nd bridge W. of Fort Pelly				
Fish creek, Alta.	Calgary-Macleod road				
" "		22	22	3	5
" (South Fork)		22	22	3	5
" (North Fork)		3, 4	22	3	5
" Assa.		22	22	3	5
Fishing river, Sask.		7	45a	27	3
Flett's creek, Sask.	Prince Albert-Stony creek trail	16	44	22	2
" "		33	43	20	2
" (branch of)		16, 17	45	20	2
" (branch of)	N.	12	44	20	2
Four Mile creek, Alta.	E.	12	44	20	2
Fortteen Mile creek, Sask.		10, 15	44	20	2
Gervais creek, Sask.	C. & E. Road, 4 miles S. of Lone Pine.	14	33	29	4
Gilbert creek, Assa.		2, 3	42	15	3
Goosehunting creek	On Batoche road				
Hastings creek, Alta.		34	16, 17	18	2
Hay creek, Assa.	W.	21	45	20	2
High river, Alta.	N.	19, 24	51	18, 19	4
" "		31, 5	10, 11	25	3
Horse Hills creek, Alta.	At High River Village.				
Indian Farm creek, Alta.	Thompson's crossing				
Irwin's creek, Assa.					
Jackfish creek, Sask.	At Levasseur's	19	6	29	4
" "	Pomerleau's bridge	30, 29	26	3	2
Jackfish Lake Narrows, Sask.	Flamand's "	21, 28	48	17	3
		15	46	17	3
	N.W.				1892
	S.W.	30	47	16	3

SCHEDULE OF BRIDGES CONSTRUCTED AS TERRITORIAL PUBLIC WORKS IN THE
NORTH-WEST TERRITORIES.—*Continued.*

NAME OF STREAM.	LOCAL NAME OF CROSSING, IF ANY.	LOCATION.					WHEN CONSTRUCTED.
		¼ SEC.	SEC.	TP.	RG.	M.	
Jumping Deer creek, Assa.	Sioux Reserve, Rd. to Touchwood Hills						Repaired 1898
Jumping Pound creek, Alta.			20	21	15	2	Repaired 1898
Kootenai or Waterton river, Alta.	At Pace's crossing		30	25	4	5	1897
Lagoon			5, 6	21	13	2	Commenced 1898
Lee's creek, Alta.	Daine's crossing, Cardston						1898
Little Arm creek, Assa.	At Crossing, Regina-Saskatoon road		6	21	22	2	1892
Little Cut Arm creek, Assa.	Sumner's crossing		33	19	1	2	1897, rebuilt 1898
Little Pipestone creek, Assa.			19	11	33	1	1898, incomplete
	Metcalf bridge		21	11	33	1	1898
	At Ebenezer		28	27	4	2	
Little Whitesand river, Assa.			22, 23	2	8	2	
Long creek (branch of) Assa.	On road allowance		15, 16	11	26	3	1889
Maple creek, Assa.	Fain's crossing.		32, 33	10	26	3	1898
"		{ N.W.	9	11	26	3	
"		{ S.W.	16				
"	Road from Village to Barracks						
Melfort creek, Sask.			30	46	18	2	
"	Melfort creek bridge		20, 29	44	18	2	1897
"			17, 18	45	18	2	
Miner's creek, Sask.	At Lily Plain		35	47	1	3	1898
"	At Wiloughby		13	46	1	3	1898
Mile creek, Alta.	River Lot 19, Edmonton Settlement						1897
Moose Jaw creek, Assa.	Manitoba crossing, Moose Jaw						1892
"	Baine's crossing		36	15	26	2	1892, repaired 1897
"	Regina-Wood Mountain road						1889
"	Near confluence of Qu'Appelle river						1897
"	Near Milestone station, Soo Line						1898
"	Stony Beach-Moose Jaw road		25	17	25	2	
"	Coventry's crossing		20, 29	15	24	2	
"	At Malleck's		14, 15	15	25	2	
Moose Mountain creek, Assa.	Alameda-Carnduff road						
"	McNeill's crossing		23, 24	7	4	2	1898
"	McDougall bridge		6, 7	8	5	2	1898

	(tributary of)			3	7	2 3	2 3	1898 1898
Muskeg "	"	Near Greenwood's, C. & E. road	S.E.	20	42	15	3	1898
Macfarlane's creek, Sask.		Battleford-Saskatoon road		13	41	14	3	1898
McKay creek, Assa.				13, 14	9	1	4	1898
Nineteen Mile creek, Sask.			S.E.	30	41	14	3	1895
Nose creek, Alta.		Calgary-Edmonton road						1898
"		North Blackfoot trail		12	24	1	5	1889, repaired 1898
Old Man's creek, Sask.		McLain's crossing, Clover Bar		24	53	23	4	Repaired 1897
Old Man's river, Alta.		South Fork bridge						1897
Parlby creek, Alta.		Prince Albert-Fort à la Corne road		29	40	23	4	1898
Pahonan creek, Sask.		Lorlie-Chickney road		12	48	21	2	Repaired 1898
Pheasant creek, Assa.			N.E.	20, 21	20	10	2	1898
"				9	21	12	2	1898
"				2, 3	20	11	2	1898
Piapot creek, Assa.				21, 22	20	10	2	1898
Pilot Butte creek, Assa.				24, 25	10	25	3	Repaired 1898
Pincher creek, Alta.				20, 29	17	18	2	
"		At village, Pincher creek						Repaired 1898
"		Routhier's crossing		25	5	1	5	
Pine creek, Alta.	(tributary of)	At Pelletier's		7	6	29	4	1898
"		Calgary-Macleod road		11		1	5	1897, repaired 1898
"		South Blackfoot road						1887
Pine creek, Sask.	(tributary of)	Carlton-Green lake trail		20, 21	22	1	5	1887
Pine Lake, Alta. (tributary of)				28	49	6	3	1898
Pipestone creek, Alta.								1898
"		Calgary-Edmonton road	E.	21	47	24	4	1887
Pipestone creek, Sask.				24	46	23	4	Repaired 1897
Pipestone creek, Assa. (branch of)				12	47	24	4	1896
"				11	44	18	3	
"				6	13	33	1	
"		McKay's crossing	N.W.	6	15	3	2	1891
"		South of Grenfell	W.	17	16	7	2	1885, repaired 1897
"		On road allowance.		13, 18	16	7, 8	2	1888
"				15	15	4	2	1884
"		South of Broadview						1888
"		Percy's crossing		11, 12	12	31	1	
"		McCormick's Bridge, on road allowance.		27, 28	11	30	1	
"		At Parkin's crossing.		9	14	2	2	Repaired 1897
"		South of Oakshela.		28	15	6	2	
"				33	15	6	2	1897
"				7	13	31	1	1888
"		South of Moosomin		28, 29	12	31	1	
"		Gilman's crossing						Repaired 1898
"		Moosomin-Moose Mountain Road		15	13	39	1	

SCHEDULE OF BRIDGES CONSTRUCTED AS TERRITORIAL PUBLIC WORKS IN THE
NORTH-WEST TERRITORIES.—*Continued.*

NAME OF STREAM.	LOCAL NAME OF CROSSING, IF ANY.	LOCATION.				WHEN CONSTRUCTED.
		1/4 SEC.	SEC.	TP.	RG.	M.
Pipestone creek, Assa.	South of Grenfell		3, 10	16	7	2 1887
"	Dring's crossing		30, 25	13	33, 34	1 1886
"			16, 17	14		2 1892, repaired 1897
"	Warren's crossing		11, 12	15	5	2 Repaired 1897
"	On road allowance		11, 14	15	5	2 1897
"			35	13	1	2 1897
"	Montgomery bridge		24, 25	10	30	1 Repaired 1898
"	Irwin bridge		19, 24	14	2, 3	2 1892
"	Keir bridge		31	13	32	1
"	Savin's bridge			13, 14	32	1
"						Repaired 1898
Point-aux-Pins creek, Alta.			34	14	3	2 1898
"			30, 31	53	22	4 1895
"	Prince Albert-Duck lake road		36	53	23	4
Priest's creek, Sask.	Armstrong's crossing					
Qu'Appelle river, Assa.	Racett's crossing		13, 14	19	23	2 1893
"	Osler crossing		23, 26	18	10	2 1886
"	Near Loon creek		17, 18	21	17	2 1886
"	Sussex crossing, Craven					1883, reconst'd 1898
"	N. of Wapella		7	18	32	1 1888
"			(12, 13	18	33	
"	N. of Whitewood		7	18	2	2 1885, repaired 1898
"	Hudson's Bay crossing at Fort Qu'Appelle.					
"	Fort Qu'Appelle Mission.		7, 8	21	13	2 1888, repaired 1898
"	East of Piapot's Reserve		26, 27	21	19	2 1893, repaired 1898
"	Near mouth of Buggy creek			19, 20	21	2 1886
"	At Katepwe		27	19	12	2 1886
"	Pinker's crossing		24	17	32	1
"	N. of Pense, near Balfour's		20, 21	19	22	2 Repaired 1898
"	Cotham bridge		20	18	4	2 1888, repaired 1898
"	Evet's crossing			21	19, 20	2
"			20, 21	21	19	2 Repaired 1897
"	Lanyon's crossing		10	19	24	2 1897

"	Whitewood-Sunner road	29	1	2	Rebuilt 1898
"	At Blackwood	9	11	2	1897
"	At Sioux crossing	13	12	2	1898
"	Kline's crossing	22, 23	21	2	1897
"	Outlet from Long lake	11	33	1	1898
"	McLean's crossing		9	2	Repaired 1898
"	Ellisboro bridge				Repaired 1898
"	Tiere crossing				Repaired 1898
"	At Lumsden	33	21	2	1890
"	West end Buffalo lake				1898
"	Ross' crossing	1, 2	11	2	
"	At Reynoldton	34	21	2	Repaired 1890
"	F't Qu'Appelle-F't Ellis trail	1	13	2	
"	(tributary of)				
Rat creek, Alta.	Edmonton				Repaired 1898
Ravine, Sask.	Battleford-Poundmaker's Reserve road, De-				
	wan's Farm	24	17	3	
Ravine, Alta.	River Lot 2, Edmonton				1898
Ravine, Assa.					
"		3	4	2	
Ravine, Alta.	On S. Morleyville trail	9, 10	33	1	
Red Deer creek, Sask.	McFarlane's crossing	3	2	5	1889
"	Carlton-Prince Albert road				
"					1881
"		29, 30	24	2	1889
"	Near John, Smith's Reserve	35	26	2	1889
"		30	25	2	1889
"	Prince Albert-Red Deer Hill road	24	27	2	1898
"	Davis' crossing	28	27	2	1897
Red Deer river, Alta.	Red Deer Village	30	26	2	1898
Riviere Qui Barre, Alta.	On Correction Line		25	2	
"		36			1897
"		12	27	4	1898
Rock creek, Alta.		13, 14	27	4	1898
Rotten creek, Assa.		29	2	5	1897
Rosebud river, Alta.			5	2	
"	Town of Broadview				
Ross creek, Assa.	Scarlett's crossing	19, 20	1	5	1898
"	Road allowance	28	5	4	Repaired 1898
Rosthern creek, Sask.	Medicine Hat-Dunmore road	23	5	4	
Round Hill creek, Sask.	Harper's crossing	26	3	3	1898
"	Rose's crossing	12	16	3	1893
Russian creek, Sask.	Bourassa's crossing	29	16	3	1892
St. Laurent river, Sask.	St. Laurent-Prince Albert road	6	12	3	
			1	3	1898

SCHEDULE OF BRIDGES CONSTRUCTED AS TERRITORIAL PUBLIC WORKS IN THE
NORTH-WEST TERRITORIES.—*Continued.*

NAME OF STREAM.	LOCAL NAME OF CROSSING, IF ANY.	LOCATION.				WHEN CONSTRUCTED.
		¼ SEC.	SEC.	TP.	RG.	M.
St. Mary river, Alta.		N.E.	29	12	5	1894
Seven Persons coulee, Assa.	1st Crossing, Dunmore trail.	S.E.	30	12	5	1888
"	2nd					
Shell river, Sask.	Prince Albert-Green lake trail					1898
Sheep creek, Alta.	At Dewdney (Okotoks)					Repaired 1898
Six Mile coulee, Alta.	Cardston-Lethbridge road					1897
Sixteen Mile creek, Sask.						
Slough	C. & E. Road, 4 miles N. of Red Deer		36	41	15	3
"	Slide Out Bottom					
Snake creek, Alta.	S. Blackfoot road		25, 30	8	24, 25	4
"	Cardston-Colles road		35	21	29	4
Snake creek, Sask.	Cardston-Green lake trail	S.E.	30	2	24	4
"	Prince Albert-Green lake trail					
Souris river, Assa.	Carlton-Green lake trail					1897
"	Near Alameda on Correction line			2, 3	2	2
"	Near Oxbow		22, 23	3	2	1894
"	Near Glen Ewen		1, 2	3	1	1898
"	Estevan-Hay Meadow trail					1898
Spring brook, Assa.			10, 15	20	14	1898
Spring creek, Alta.	Carey's Creek, S. of Railway at Canmore.					
Spring creek, Assa.	Regina		31	19	19	1888
"			21	19	7	Repaired 1898
"	Regina-Saskatoon road					
"	Regina-Sussex					1888
"		N.W.	12	20	21	2
Spring creek, Sask.	Eagle Creek Valley	S.E.	5	39	10	3
"			5	41	13	1898
"						1895, reconst'd 1897
Steep creek, Sask.	Prince Albert-Forks road		18	49	23	2
Stony creek, Assa.			14, 15	27	32	1
"			34, 35	27	32	1
"			22, 23	27	32	1
"			23	27	32	1
Sheep creek, Alta.	C. & E. Road		34	29	1	5
"	Near Duthie, Banff		23	25	11	5
"	Foot of Stony Hill, Banff		28	25	11	5
Sturgeon river, Alta.	St. Albert R. C. Mission					1888, repaired 1898

"	Athabasca trail	14	56	23	4	1889
"	Near and below mouth of Egg lake creek.	10	55	24	4	
"	Kelly's crossing	8	55	24	4	Repaired 1898
"	Lamoureux bridge	25	55	24	4	
"	Creuzot bridge	29	55	22	4	
"	At Devil's Lake		54	2	5	Repaired 1897
"	2nd bridge past Michael's Reserve		54	1	5	Repaired 1897
"	Cunningham bridge, R. Lot 2, St. Albert Settlement.					
"	Prince Albert-Green lake road	36, 6	54, 55			Repaired 1898
"	Battleford-Saskatoon road		49	25	4	1897
"	C. & E. Road, 50 miles N. of Calgary			27	2	Repaired 1897
"	Battleford-Saskatoon road	20		15	3	1895
"	Near Moose Jaw	7	39	9	3	1898
"	C. & E. Road, 36 miles N. of Calgary	10, 11	44	19	2	
"	Calgary-Macleod road	6, 1	17, 17	27, 28	2	1887
"	Edmonton-Athabasca road	19	8	1	5	1898
"	Edmonton-Athabasca trail					1887
"	Battleford-Edmonton road					1890, reconst'd 1898
"	Government House-Barracks road	23	17	20	2	1881
"	Dewdney St. crossing, Regina	22, 27	17	20	2	1888
"	At Carssdale	9, 10	17	19	2	Repaired 1898
"	Six miles S.E. Regina	19, 30	19	21	2	1885
"	On Road allowance	36, 1	16, 17	19	2	1892
"		4, 5	19	21	2	
"		9, 10	16	18	2	1897
"		31, 32	17	20	2	Repaired 1898
"	East Branch	21	18	21	2	Lengthened 1898
"	Near Broadview	N.	41	14	3	1895
"	On road	S.W.	15	4	2	1887, repaired 1897
"	Jenzen's bridge	27	28	4	2	1897
"	McKenzie bridge	11, 12	27	4	2	Repaired 1898
"	Muth bridge		31	1	2	Repaired 1898
"	Proctor bridge					1898
"	Theodore bridge	12	28	5	2	1898
"		1	28	7	2	1898
"	N.E. corner White Mud lake	32, 5	35, 36	27	4	
"	Edmonton-Athabasca trail	8	48	18	3	1898
"						Reconstructed 1898

SCHEDULE OF BRIDGES CONSTRUCTED AS TERRITORIAL PUBLIC WORKS IN THE
NORTH-WEST TERRITORIES.—Continued.

NAME OF STREAM.	LOCAL NAME OF CROSSING, IF ANY.	LOCATION.					WHEN CONSTRUCTED.
		¼ SEC.	SEC.	TP.	RG.	M.	
Willow creek, Sask.		N.	35	44	17	2	1898
Willow creek, Alta.	Macleod-Calgary road	N.W.	12	17	10	2	Commenced 1898
Wolf creek, Assa.	Connee bridge	S.W.	13	17	10	2	1898
"			19, 24	16	9, 10	2	Repaired 1898
"	Clokey bridge	N.E.	11	17	10	2	1891
"	Foot bridge across reservoir	S.W.	13	17	10	2	1891
"	At Wolseley reservoir	N.E.	11	17	10	2	1898
"	N. & S. Streets, Wolseley			16, 17	10	2	1898
"			11	17	10	2	Repaired 1898
"	C. & E. road (branch of creek)	S.W.	8	41	26	4	1889, reconst'd 1898
Wolf creek, Alta.	C. & E. road						

REPAIRS TO PUBLIC WORKS.

During the past fiscal year the sum of \$10,099 was expended on repairs to public works. The larger portion of this expenditure was for the repair of bridges, culverts and dams, but certain repairs to other public works were also found necessary.

The repair each year of existing public works is necessarily one of the first charges upon any sum available for public works expenditure, for no matter how unnecessary a bridge, culvert, dam or other structure may have been at the time of its construction, once constructed it must be kept in repair. This charge upon our annual expenditure will, owing to the style of structures which were constructed in the past, for many years necessitate the putting aside of considerable sums for the repair of public works, and we can only hope to reduce the amount in the future by constructing works of a more permanent character.

The fact that all the bridges constructed as Territorial public works before the organisation of the Public Works Branch were, with one exception, wooden structures, has already been referred to, but the question of the large expenditure necessary to keep these structures in serviceable condition merits some consideration.

The life of an ordinary wooden bridge is only from ten to fifteen years, and after even three or four years service it needs repairs to the flooring and other parts. These facts being borne in mind, it is quite evident that a very considerable sum will be needed each year for many years to come to keep the two hundred or more wooden bridges now constructed in a condition for safe use. Many of the large wooden bridges erected under the direction of the Lieutenant Governor and the Executive Committee are now approaching the limit of their usefulness, and the extent and expense of repairs to structures of this character naturally increases as this limit is neared. In some instances the repair of these old bridges necessitates expenditures which would pay a considerable portion of the cost of new and permanent structures, and within the next year or two the question of removing instead of attempting to repair these old bridges and providing new and more permanent ones will have to be considered. Consideration should also be given the question of trying to add to the life of all wooden bridges by painting them. None of the bridges of this class so far erected have been painted, and there is little doubt that the life of the structures and their appearance can both be added to by giving them a coat of paint.

The repair of the many hundreds of culverts which have been constructed during past years constitutes a very considerable portion of the expenditure under the head of repairs. These culverts have in almost all instances been built in connection with the grading of roads, and the usefulness of the road for the movement of heavy loads is of course materially reduced the moment the culverts forming part of the road bed get out of repair. So far the culverts constructed have been almost entirely of wood, and, owing to existing conditions in the larger portion of the Territories, this material must continue to be used in new structures of this kind. In certain districts, where it is possible to obtain stone, we are using that material in building culverts and are also encouraging the Overseers of Local Improvement Districts to use stone wherever possible in the culverts and small bridges constructed by them. The bearing which drainage, and culverts to carry this drainage, has upon the construction of good roads is more fully dealt with under the head of "Road Grading," but it may be here stated that the question of providing suit-

able vitrified clay pipe for culverts in these portions of the Territories is receiving consideration and it is possible that in the near future we may be able to substitute this durable material in place of the present perishable wooden structures.

The construction of culverts is, as has already been stated, intimately connected with the question of the construction and improvement of roads, and is referred to at some length under that heading in the latter part of this report. In the past the number of culverts placed in some roads has been entirely beyond the requirements for drainage and run-off, while in other instances roads have been built with an almost entire lack of proper drainage facilities.

In future more attention should be given to this feature of road construction, and the site, size and style of culverts determined by an examination of the location for the roads before grading is commenced.

SURVEYS.

One of the most important branches of our departmental work comprises the survey of old trails, new roads, road allowance diversions, and other rights of way required for public purposes. Up to the time of the organisation of the Public Works Branch the importance of properly executed and recorded surveys, particularly as regards the right of way for roads, seems to have been entirely overlooked, and as a consequence a very chaotic and troublesome condition of affairs was discovered the moment we endeavoured to obtain any information regarding the surveys which had been made prior to that time.

This state of affairs was the outcome of several conditions which existed prior to 1896. Before that date the surveys of old trails in the Territories were performed through the Department of the Interior although the initiatory steps for the survey rested with the Lieutenant Governor, and this dual administrative authority naturally resulted in confusion and misunderstanding. Then, in dealing with the survey of road allowance diversions of new roads, the trouble was increased by the fact that the Lieutenant Governor, the local members, and the Department of the Interior all dealt with the question and, as was to be expected, this condition of affairs resulted in mistakes, delays and disputes which have handed down to the Department of Public Works a very troublesome number of cases and a mass of work which will take some time to straighten out.

No systematic record of the surveys completed, or examination or registration of the returns of these surveys was attempted under the old system, and at the time of the organisation of the Public Works Branch a somewhat roomy cupboard was pointed out as being supposed to contain the plans, field notes and other records of the completed surveys, but what the cupboard did contain was entirely a matter of guess work.

One of the first questions taken up after the organisation of the Public Works Branch was the amendment of the provisions of The North-West Territories Act with the object of centralising the control and management of all these surveys in the Territorial Government. This amendment having been passed at the same time as those giving the Territories responsible government, and the control of the surveys having been delegated to this department, we have since been endeavouring to get matters relating to old surveys closed up, and also to inaugurate a proper system of dealing with the surveys and the obtaining of the title to lands defined by such surveys.

A schedule of the surveys completed up to date is appended, but this schedule, like that relating to bridges, is probably somewhat incomplete owing to the fact that surveys were made under the old system, under instructions from the Lieutenant Governor or the local members, of which we have as yet been unable to find any returns. It may also be noted, as illustrating the unsatisfactory condition of this class of the work handed over to the department, that only in a very small number of cases of the surveys mentioned in the accompanying schedule which were completed before the organisation of the department were the returns properly registered, and, so far as we have been able to discover, in not more than 47 cases were steps taken to acquire the title to the roads set apart for these surveys. We are, as has been stated, now making an effort to get the returns of the surveys and the obtaining of the titles to the roads properly closed up, but like all matters which might have been easily settled at the time of their completion, delay has caused much difficulty, owing to the death or removal of some of the surveyors or the owners of the property affected, in getting many of the cases properly closed.

SCHEDULE OF OLD TRAILS SURVEYED IN NORTH-WEST TERRITORIES.

FROM	TO	SURVEYED IN
Moosomin	5 miles west Moose Mountain P.O.	1885
Fort Ellice	Craven, Qu'Appelle Valley	1886
Troy	Prince Albert	1886
Swift Current	Battleford	1886
Calgary to Edmonton	Edmonton	1886
Calgary	Fort Macleod	1886
Blackfoot Crossing	Fort Macleod	1887
Prince Albert	Halcro Settlement, via Red Deer Hill.	1884
Prince Albert	Saskatchewan Forks	1884-1887
Prince Albert (via Island Lake)	S.W. of Muskoday's Reserve	1884
N.E. of Muskoday's Reserve	Prince Albert	1884
Halcro	North limit Muskoday's Reserve	1884
Carlton Forks	Batoche's Crossing	1884
North limit St. Laurent Mission	Duck Lake	1884
Batoche's Landing	Gabriel's Crossing	1884
Duck Lake	Gabriel's Crossing	1884
Calgary	Blackfoot Crossing, via Bow R. Bottom	1887
Qu'Appelle Station	Towards Wood Mountain	1887
Blackfoot Crossing	Calgary, north of Bow river	1887
Calgary	Morleyville	1887
Calgary	Morleyville, south of Bow river	1888
Medicine Hat	Dunmore	1887
Carrot River Settlement	Prince Albert	1888
North Limit Muskoday's Reserve	Saskatchewan Forks	1888
Carlton	Prince Albert	1887
Carlton	Duck Lake	1887
Halcro Settlement	Forks Saskatchewan	1887
Carlton	Green Lake	1888
Edmonton	Fort Saskatchewan	1889
Edmonton	St. Albert Mission	1889
Qu'Appelle	Katepwe	1889
Gabriel's Crossing	Humboldt	1889
Fort a la Corne	Stanley's Crossing, S. Saskatchewan	1889
Qu'Appelle and Prince Albert	Batoche	1889
Duck Lake	Batoche	1884
Pahonan	Carrot River Settlement	1889
Cochrane and Mitford	Dog Pound Creek	1894
Henrietta	Battleford and Onion lake	1894

SCHEDULE OF OLD TRAILS SURVEYED IN NORTH-WEST
TERRITORIES.—*Continued.*

FROM	TO	SURVEYED IN
Edmonton	Athabasca Landing	1897
Lethbridge	Macleod	1894
Macleod	Pincher Creek	1894
Macleod	International Boundary	1894
Pincher Creek	Crow's Nest Pass	1894
Morley	Banff, north Bow River	1891
Pincher Creek	Mountains	1894
Pincher Creek	Fishburn	1894
Lethbridge	Cardston	1898
Edmonton	Stony Plain Reserve	1895
South Edmonton	Battle River	1895
Fort Saskatchewan	Victoria (south side river)	1896
Fort Saskatchewan	Beaver Creek	1896
Maple Creek and Four Mile Coulee	Old Fort Walsh (part of)	1898
Henrietta	Saskatoon	1894
Cardston	Mountain View (part of)	1898
Cardston	Mountains (part of)	1898
Cardston	Boundary Creek (part of)	1898
Fish Creek (through St. Laurent)	McKenzie's Crossing	1891
Macleod	Mission Bridge	1887
Gardepuis' Old Crossing	Saskatoon	1891
Through Halcro Settlement	Township 46, Range 26, W 2 M.	1898
Part of Morley to Banff trail	Carievale and Rocky Mountain Park	1888
Boulevard along Bow river	Near Calgary	1884

SCHEDULE OF NEW ROADS SURVEYED IN NORTH-WEST TERRITORIES.

DESCRIPTION.	SURVEYED IN
Prince Albert-Green Lake	1898
North Morley trail. Bow Marsh bridge	1887
Pincher Creek. Coal mine	1893
Pincher Creek. Saw mill	1893
South Fork Fish Creek. North Fork Sheep Creek	1894
North and Middle Forks Sheep Creek	1895
West Boundary Government Farm. Tp. 22 & 23, R. 1, W. 5	1897
Between Indian Head (south railway) Qu'Appelle	1892
Across Red Fox Coulee. Sec. 34, Tp. 18, R. 12, W. 2	1894
Up ravine (Qu'Appelle). Tp. 19, R. 12, W. 2	1894
Via ravine across Qu'Appelle Valley. Tp. 19, R. 12, W. 2	1894
S. side Qu'Appelle Valley near R. C. Mission, across Industrial School Reserve	1892
Qu'Appelle Valley, westward Secs. 20, 26, Tp. 20, R. 12, W. 2	1892
Fort Qu'Appelle. South via Bakery Hill to town Fort Qu'Appelle	1892
Standing Buffalo Reserve (south.) Secs. 16 and 21, Tp. 21, R. 14, W. 2	1894
Troy and Prince Albert trail, Qu'Appelle Valley	1894
Across Qu'Appelle Valley. Tps. 19 and 19a, R. 11, W. 2	1889
Up S. side Qu'Appelle Valley via ravine. Tp. 19, R. 11, W. 2	1891
Up S. side Qu'Appelle Valley via ravine. Sec. 4, Tp. 19a, R. 11, W. 2	1894
Up ravine N. bank Qu'Appelle Valley. Sec. 2, Tp. 19, R. 11, W. 2	1894
Tp. 18, R. 1, W. 2, Qu'Appelle Valley	1892
Following course of Dakota trail. Tp. 27, Rs. 5 and 6, W. 2	1895
Sec. 29, Tp. 46, R. 16, W. 3; bridge on Round Hill creek	1892
W. $\frac{1}{2}$ Sec. 30, Tp. 47, R. 16, W. 3; bridge at Narrows, St. Michael trail	1892
To bridge over Jack Fish creek on trail to Onion Lake	1892
In Secs. 10, 11, Tp. 9, R. 26, W. 4	1893
In Secs. 29, 30, Tp. 12, R. 5, W. 4	1893
In Secs. 21, 22, 23, 24, Tp. 9, R. 30, W. 3	1893

SCHEDULE OF NEW ROADS SURVEYED IN NORTH-WEST TERRITORIES.—*Continued.*

DESCRIPTION.	SURVEYED IN
In Secs. 29, 30, 31, 33, Tp. 9, R. 29, W. 3	1893
In Secs. 13, 14, 23, 24, Tp. 9, R. 1, W. 4	1893
Around Elkwater Lake; Secs. 24, 25, Tp. 8, R. 3, W. 4	1893
Along north boundary, Section 16, Tp. 16, R. 9, W. 2	1898
Secs. 11, 12, Tp. 12, R. 31, W. 1	1896
N. and S. Sheep Creek, Tp. 20, R. 29, W. 4, and Tp. 20, Rs. 1, 2, W. 5	1898
In Tp. 10, R. 28, W. 4	1893
Across front Hudson's Bay Co. property at Athabasca Landing	1897
To bridge across South Fork Old Man's River, Tp. 7, R. 1, W. 5	1898
East side Jack Fish Lake, Tps. 47, 48, Rs. 16, 17, W. 3	1897
Through river lot 2, Edmonton	1886
Through Sections 19, 30, 31, Tp. 20, R. 13, and Secs 24, 25, 36, Tp. 20, R. 14	1894
Lethbridge to Belly river bridge	1893
Lily Plains to Sec. 4, Tp. 49, R. 1, W. 3	1898
Around a lake in Sec. 13, Tp. 46, R. 28, W. 2	1898
South boundary Sec. 11, Tp. 19a, R. 8, W. 2	1898
E. $\frac{1}{2}$ Sec. 2, Tp. 39, R. 4, W. 3	1898
Through Tp. 31, R. 1, W. 5. Access to Didsbury station	1898
Through Hudson Bay Co. property at Athabasca Landing	1897
Through Secs. 6, 7, Tp. 19a, R. 11, W. 2, and Sec. 5, Tp. 19, R. 11, W. 2	1898
From N.E. corner Sec. 19, Tp. 54, R. 24, W. 4, to river lot 59, St. Albert	1898
In Sec. 11, Tp. 17, R. 10, W. 2, leading S.W. from Wolseley	1898
In S.W. $\frac{1}{4}$ Sec. 14, Tp. 17, R. 10, W. 2, leading N.W. from Wolseley	1898
In N.W. $\frac{1}{4}$ Sec. 12, Tp. 17, R. 10, W. 2, leading N.E. from Wolseley	1898
In N. $\frac{1}{2}$ Sec. 13, Tp. 17, R. 10, W. 2, leading N. from Wolseley	1898
In Secs. 4 and 9, Tp. 19a, R. 7, W. 2	1898
In Secs. 18, 19, 20, Tp. 20, R. 32, W. 1	1898
In Secs. 1, 2, Tp. 16, R. 30, W. 1	1898
In Secs. 23, 24, Tp. 7, R. 3, W. 2	1898
In Sec. 7, Tp. 14, R. 1, W. 2 and Sec. 12, Tp. 14, R. 2, W. 2	1898
In Secs. 26, 34, 35, Tp. 13, R. 1, W. 2	1898
From N.E. angle Tp. 25, R. 2, W. 2 to Stony Creek	1898
From Stony Creek to Salteoats and Yorkton	1898
To Kelly's bridge, Tp. 55, R. 24, W. 4 and Tp. 55, R. 25, W. 4	1898
In Secs. 10, 11, Tp. 52, R. 23, W. 4	1898
Between Secs. 16, 17, Tp. 20, R. 7, W. 2	1898
Along N. boundary S. 16, Tp. 38, R. 28, W. 4	1898
Between Secs. 13, 24, Tp. 24, R. 3, W. 5	1898
At Cochrane Station	1890
At ford south of High River ford, Tp. 17, R. 2, W. 5	1890
Between Anthracite and Banff (along C.P.R.)	1897
Across Secs. 16, 17, Tp. 18, R. 21, W. 2	1893
Through Sec. 11, Tp. 21, R. 33, W. 1	1892
At Kinbrae in S.E. $\frac{1}{4}$ Sec. 31, Tp. 32, R. 2, W. 2	1895
Edmonton to Peace River (exploratory)	1898
Fort St. John to Nelson River (exploratory)	1898
Along south boundary Sec. 11, Tp. 20, R. 29, W. 4	1898
At Grenfell in Sec. 8, Tp. 17, R. 7, W. 2	1888
Between Secs. 15, 22, Tp. 44, R. 20, W. 2	1898
Along south boundary S. $\frac{1}{2}$ Sec. 33, Tp. 20, R. 1, W. 5	1894
To Wingard Ferry across Saskatchewan river	1897
Road in S. E. $\frac{1}{4}$ Sec. 32, Tp. 18, R. 11, W. 2	1896
Up west fork Nose creek (incompleted)	1898
Between Secs. 27, 28, 29, 30, 31, 32, 33, 34, Tp. 50, R. 24, W. 4	1898
Wetaskiwin to Bittern and Dried Meat Lakes (incompleted)	1898
West side Beaver Lake, Tp. 52, Rs. 18 and 19, W. 4	1898
Across Sheep creek, S. E. Sec. 29, Tp. 20, R. 29, W. 4	1898
Edmonton to Beaver Lake	1898
For ditch in S. W. $\frac{1}{4}$ Sec. 34, Tp. 48, R. 24, W. 2	1897

ROAD DIVERSIONS SURVEYED AND SET ASIDE IN THE TERRITORIES
AS PUBLIC HIGHWAYS.

DESCRIPTION.	LOCATION.					SURVEYED IN
	Pt. Sec.	Sec.	Tp.	Rg.	M	
From hill N. side Saskatchewan to Clover Bar	S.E.	30	53	23	4	1892
Across Mill creek east of South Edmonton						
ferry		22, 27	52	24	4	1892
From Fort Saskatchewan trail on north		27, 28				
boundary 30-53-23-4 to North Saskatche-		29, 30	53	23	4	1894
wan river		31, 32				
		33, 34				
To avoid bridges across Riviere qui Barre		12	55	27	4	1894
Across White Mud creek		1	52	25	4	1894
To avoid crossing White Mud creek	N.W.	10	51	25	4	1894
Across Black Mud creek to C. & E. railway ..		29	51	24	4	1894
Following W. side Black Mud creek		15, 22	51	25	4	1894
To avoid a creek		29	54	22	4	1895
To ferry on S. side N. Saskatchewan river ..	S.E.	12	58	17	4	1895
To avoid crossings on Beaver creek			55	19	4	1895
To avoid crossings on Beaver creek		22	55	19	4	1895
To avoid a lake	W. $\frac{1}{2}$	3	54	22	4	1895
Carlton and Prince Albert trail in H. B. Co.						
Reserve						1893
North boundary		15, 16	48	25	2	1889
To bridge at Thompson's crossing, High					4	1890
River		16	21	28	4	1890
At Sparrow's		3	24	1	5	1890
Fish creek trail		22, 26	22	3	5	1892
		35				
At Burke's		25, 26	21	29	4	1892
At Thomas'		33	21	29	4	1892
At Wright's coulee		34	21	29	4	1892
At Grierson's hill		28	21	29	4	1892
At Jamieson's hill		8	21	1	5	1892
At Laboucanne settlement			46	21	4	1893
At Pincher creek (Morden & Hyde)	N.W.	23	6	30	4	1893
"		22	5	28	4	1893
"		28	5	28	4	1893
At Sawyer's hill		22, 27	20	29	4	1893
At Red Deer (from the east)		15, 22	38	27	4	1893
At Innisfail		35, 36	35	1	5	1893
At Roger's hill		18	22	1	5	1893
Near Calgary		30	24	2	5	1893
At Reinhardt's and Hall's		18	22	1	5	1893
"		13	22	2	5	1893
At Young's hill		2, 3	22	3	5	1894
South Fork Fish creek		4	22	3	5	1894
At Newson's creek		34	21	3	5	1894
Substitute road		26	21	3	5	1894
Roger's crossing, Sheep creek		19	20	1	5	1894
Substitute road		14, 15	21	3	5	1894
Anderson's hill		9	21	3	5	1894
Crossing of Fish creek		3	23	1	5	1895
Old's district		31	32	2	5	1895
"		5, 6	33	2	5	1895
"		36	32	3	5	1895
At Leacock's		34	24	1	5	1896
At Gleichen		18	22	22	4	1896
Across Red Fox coulee		27	18	12	2	1891
Across Qu'Appelle Valley		6, 7	19a	12	2	1891
		6, 7	19	12	2	1891
Brook's across ravine		24, 25	19	13	2	1891
Down ravine to Qu'Appelle Valley		18, 20				
		21, 22	19	12	2	1891
		27				
From Qu'Appelle Valley south		15, 22	19	12	2	1891
Connecting with Brooke's road		24	19	13	2	1891

ROAD DIVERSIONS SURVEYED AND SET ASIDE IN THE TERRITORIES
AS PUBLIC HIGHWAYS.—*Continued.*

DESCRIPTIONS.	LOCATION.					SURVEYED IN
	Pt. Sec.	Sec.	Tp.	Rg.	M	
Across ravine (Sanderson road)	W. $\frac{1}{2}$	10	19	12	2	1893
Qu'Appelle and Wood Mountain			18	14	2	1895
Qu'Appelle Street northward		33	18	14	2	1895
To avoid jog in 5th correction line		1, 12	19a	12	2	1896
To avoid coulee	S. $\frac{1}{2}$	3	19a	12	2	1896
Up coulee bank	N.W.	34	18	12	2	1896
To avoid deep coulee	N.W.	35	18	12	2	1896-1898
To avoid jog in 5th correction line		4, 9	19a	12	2	1896
Across coulee	S.W.	19	19	12	2	1896
Across coulee	N.E.	25	19	12	2	1896
Across coulee		18, 19	19	12	2	1896
North bank Qu'Appelle Valley		25	21	14	2	1892
To avoid coulee			21	13	2	1893
Connecting Standing Buffalo's Reserve trail		16	21	14	2	1894
To avoid deep ravine		21	18	11	2	1894
To avoid slough	N.E.	4	18	11	2	1894
Across ravine		11, 14	18	11	2	1894
Across Qu'Appelle Valley at Hyde			19	7	2	1891
Across reservoir at Wolseley		12, 13	17	10	2	1891
Across valley of Pipestone		17	16	7	2	1891
Up north bank Qu'Appelle Valley		4, 5	19a	8	2	1891
Across valley of Pipestone		12, 13 18, 19	4	3	2	1891
Around end of Ecapo lake	N. $\frac{1}{2}$	22	16	5	2	1892
Across valley of Pipestone		24	15	6	2	1892
To Pipestone valley		19	14	2	2	1895
Across Qu'Appelle river		7	18	2	2	1895
To Pipestone valley	N.E.	24	15	6	2	1895
S.E. end of Ecapo lake		17, 20	15	4	2	1895
Across Cussed creek	S.W.	30	27	4	2	1895
Across Whitesand river	E. $\frac{1}{2}$	27	28	4	2	1895
In the town of Yorkton		2	26	4	2	1893
Across Wascana river		22	17	20	2	1891
To ferry at Battleford	S.W.	6	44	16	3	1892
For ditch	N. $\frac{1}{2}$	10	34	1	5	1897
Into town of Wetaskiwin	W. $\frac{1}{2}$	14	46	24	4	1898
Atcheson's	N.W.	20	13	1	2	1897
Road in	S.W.	3	25	1	5	1897
"	N.W.	34	24	1	5	1897
Matthias	S.E.	6	41	26	4	1898
Part of Morleyville road crossing Ghost river		13	26	6	5	1897
Road in McNutt property	S.W.	12	24	2	2	1898
" Bolton property	S.E.	12	24	2	2	1893
" McDermott property		12	19	13	2	1897
" Mrs. Larry's property	N.W.	19	14	2	2	1895
"		13	18	12	2	1898
"	N.W.	16	19	12	2	1897
"		6	15	3	2	1892
"	S. E.	28	19	7	2	1890
"		36	23	2	2	1893
"		10, 15	16	7	2	1893
"		9, 16	18	9	2	1893
"	S.W.	35	18	25	2	1893
"	N.W.	26	18	25	2	1893
"	S.E.	35	18	25	2	1893
"	N. $\frac{1}{2}$	10	19	24	2	1887
"		16, 21	44	20	2	1893
"		25	47	27	2	1897
"		11	14	31	1	1893
"	E. $\frac{1}{2}$	17	20	32	1	1896
"	S.W.	13	41	14	3	1898
"		1, 12	19	13	2	1898
"		30, 31	18	9	2	1891

ROAD DIVERSIONS SURVEYED AND SET ASIDE IN THE TERRITORIES
AS PUBLIC HIGHWAYS.—*Continued.*

DESCRIPTION.	LOCATION.					SURVEYED IN
	Pt. Sec.	Sec.	Tp.	Rg.	M	
Through One Arrow's Indian Reserve						1893
Blocks X and Y river lots 11, 13, South Ed- monton						1895
At Anthracite						1895
Road in		5, 8	26	4	5	
"	E. $\frac{1}{2}$	12	51	25	4	1896
River lots 22, 24, 26, 28, 30, Fort Saskatche- wan settlement						1897
Part Macleod, Pincher creek at Scott's coulee, Piegan Reserve						1897
Macleod, Pincher creek	W. $\frac{1}{2}$	30	8	27	4	1897
Calgary and Edmonton		21, 28	35	28	4	1891
Road in	N.W.	34	21	29	4	1887
"		18	6	1	5	1889
"	S.W.	11	22	3	5	1892
"	S.E.	26	21	29	4	1892
"	S.W.	25	21	29	4	1892
Wide Awake trail			20, 21	13	2	1898
Road in	S.E.	10	19	1	2	1898
"	S.W.	4	6	1	5	1898
"	N.E.	3	6	1	5	1898
"	S.E.	10	6	1	5	1898
"	S.W.	4	19a	2	2	1898
"	N.E.	32	13	31	1	1898
"	S.E.	11	26	4	2	1898
"	S.W.	13	20	11	2	1898
"		27	11	30	1	1896
"	S.W.	24	17	10	2	1898
"		3	18	9	2	1898
"	N.W.	29	16	7	2	1898
"	S.W.	17	16	7	2	1898
"	S.W.	3	17	2	2	1898
"	N.E.	14	25	3	2	1898
"	S.W.	12	25	4	2	1898
"	N. $\frac{1}{2}$	6	19	31	1	1898
"	N.E.	23	15	30	1	1898
"	S.W.	35	13	2	2	1898
"		9	14	1	2	1898
"	N.E.	27	21	31	1	1898
"	S. $\frac{1}{2}$	15	22	31	1	1898
"		5	25	4	2	1898
"	N.E.	35	18	12	2	1897
To Baker's dam	N.W.	31	32	13	2	1898
To Bray's dam	N.E.	20	30	11	2	1898
To Hall's dam	N.W.	12	29	15	2	1898
To Braithwaite's dam		24	19	13	2	1898
To Galbraith's dam		19	19	12	2	1898
To Davis' dam		23	15	30	1	1898
To Langenburg dam		27	21	31	1	1898
To Cascana dam		23, 24	20	13	2	1898
Neeley's dam		4, 9	30	15	2	1898
To Buntin's dam		19, 36	19	12, 13	2	1898
To Miller's dam	N.E.	35	18	12	2	1898
To Johnstone dam	S.W.	3	17	2	2	1898
To Beaver creek dam		1, 2	16	30	1	1898
Along Souris creek, C. P. R. near Oxbow		24	3	2	2	1894
At Pincher creek (C. Kettles)		22	6	30	4	1893
" (Morgan and Cummings)		23	6	30	4	1893
Road in		5	19	9	2	1898
Conn's dam	S.E.	8	18	9	2	1898
Perley dam	N.W.	28	22	12	2	1898
Schneider dam		15	22	31	1	1898
Road in	S.E.	24	35	1	5	1898

ROAD DIVERSIONS SURVEYED AND SET ASIDE IN THE TERRITORIES
AS PUBLIC HIGHWAYS.—*Continued.*

DESCRIPTION.	LOCATION.					SURVEYED IN
	Pt. Sec.	Sec.	Tp.	Rg.	M	
Red Deer school		14	38	28	4	1898
Road in		13, 14	38	28	4	1898
"		15	38	28	4	1898
"		22	40	23	4	1898
"		29	40	23	4	1898
"		19	25	4	5	1897
"		19	25	4	5	1897
"		9, 10	21	12	2	1897
"		16, 21	44	20	2	1893
At townsite of Leduc	N.E.	26	49	25	4	1894
Road in		30	20	12	2	1898
"	S.E.	30	11	33	1	1893
"	S.W.	7	8	5	2	1893
"	S.W.	34	11	30	1	1893
"	S.W.	7	8	5	2	1893
" (Seeman)	E. $\frac{1}{2}$	1	28	7	2	1894
"		10, 11,	18	16	2	1898
"		14, 15				

In addition to the surveys of old trails, new roads, road allowance diversions and rights of way for dams and the reservoirs created thereby, which have been completed since the organisation of the department, as is indicated by the date in the foregoing schedule, we have been called upon to undertake surveys of an exploratory character in connection with the opening up of the waggon road from Edmonton to Peace River, and from thence to the Nelson River.

The subject of the opening up of these roads is one which has attracted considerable interest in the minds of the public, and it has therefore been thought well to include the reports of Messrs. Chalmers and McFee, Dominion Land Surveyors, who made these exploratory surveys, together with the maps illustrating their reports.

EDMONTON, 16th January, 1899.

J. S. DENNIS, Esq.,
The Deputy Commissioner Public Works,
Regina, Assa.

SIR,—

I have the honour to report that, in accordance with your instructions dated September 3rd, 1897, I left Edmonton on the 9th of September with Corporal McDonald and Constable Keyes, of the North-West Mounted Police, and D. Noyes, acting as guide, to explore the country between Old Fort Assiniboine and Lesser Slave Lake to decide as to the best route for a waggon road. It was intended that in making this exploration we should follow, as nearly as possible, a line laid down by yourself upon a map which had been forwarded to me.

There being a good cart trail to the Assiniboine River, I made that part of the trip in carts, but was delayed considerably by fallen timber between the Pembina and Athabasca Rivers. I arrived, however, at the Athabasca on the 15th.

I then found it necessary to engage the services of an Indian as the time of the men was fully occupied in looking after the horses. After reaching the river I explored the banks for about three miles before finding a suitable crossing. We left the carts here and crossed the river by means of a boat made out of oiled duck, which we had carried with us for the purpose. Going about three miles down the river, over rough and heavily wooded ground, it was found that the trail returned to a point opposite the place where we first reached the river. The crossing for the ferry which it was intended to establish was afterwards made here.

On both sides of the river there is an abundance of feed. Proceeding in a northerly direction for some six miles we reached the summit of a hill up which a very fair road could be constructed. Six miles further on we came to Clearwater Creek, the banks of which are about 250 feet high and very steep. Crossing this creek we followed a westerly course for about three miles when we came to Conjuring Creek. The country passed through from the river to this point consists of rolling sand hills covered with jack pine, with lakes and sloughs between the ridges. From Conjuring Creek we travelled northwesterly, through small poplar, for about three miles to Deep Creek.

This Creek is about 40 feet wide with banks from 10 to 12 feet high. There is evidence that at high water the level of the banks is reached. This creek should be bridged, as the approaches to the ford wash out during times of high water. The general course of this creek was followed in a westerly direction for about eleven miles to Goose Lake. For the last mile the trail runs through a large hay meadow from which I estimate two hundred tons of hay could be secured.

Goose Lake is about a mile and a half long and one mile wide, and lies about two miles north of Deep Creek. I camped at this place over Sunday. Finding a road could not be made through the hay slough I examined the country along Deep Creek and eventually located a road there. For the next fifteen miles, in a northerly and westerly direction, we traversed a great deal of soft ground, but some of this can be avoided. The country is pretty rough with gravel ridges. We saw some small patches of green poplar, but for the most part the timber has been nearly all burned. About nine miles from Goose Lake there is a crossing over Vermillion Creek. We camped for the night on the edge of a creek, which I believe to be Muskeg Creek, but it may be the Vermillion that has bent back and runs north from here.

As I had now arrived at the point at which I was instructed to leave the trail I turned westerly and travelled along the foot of some hills. They trended more to the north than I wished, but as all along the foot to the south was muskeg I was obliged to follow them. Three hours' journey brought us to a lake which I was told is called "Squaw Lake." Its length is about six and a half miles and its width varies from one to three miles. It is one of the prettiest lakes I have seen and abounds with fish. Following the south shore we found the ground rough but passable. Near the lake there is much spruce and cottonwood, but back from the water there is brule. From the west end of this lake to Salteaux Creek, a distance of some eighteen miles, there is a great deal of soft ground. It is either muskeg or alkali and would require much work if taken as the line of route. Passing through here I discovered that the compass could not be relied upon and had to make my course by the sun. Salteaux Creek is 18 feet wide and would require to be bridged.

From this point we commenced the ascent of the Swan Hills, travel-

ling through brule and generally following ridges. These hills are about twelve miles long and present no serious obstacles to road making, the country travelled over being mostly brule or light poplar. The hills are about five miles across and the country rough and full of muskegs. The timber consists of spruce, tamarac and jack pine. From the top of the west side of the hill a view is obtained of one of the bays of Lesser Slave Lake. As there is only one bay shown on the plan given me, and as that bay is shown at the west end, I concluded that I had been travelling faster than I thought and was therefore nearly south of the west end of the bay. I took a bearing from this point and, so far as the nature of the ground would permit, kept it until I reached the lake. The descent from the top of the hills to Swan River is very steep, but by spending time I think a fair grade could be picked out. It is about eleven miles from the top of the hill to Swan River, the height of the hills being about a thousand feet above the river. At the time we crossed the river was about 50 feet wide and one foot deep, winding through gravel bars which spread out for about a quarter of a mile. On these bars were found large pieces of float gold, and along the river banks is some good spruce. From Soda Creek to Swan River there is not much feed but there is any quantity in the bottom of the Swan River.

At the point we crossed the river two trails were struck, one following the river, the other going west over a range of hills. We followed the latter and arrived at the summit, the rise being very gradual in about six miles. There are several bad coulees on the west side. After crossing them the trail forks, one branch (which looked very old) continuing in about the same direction, and the other turning northward and leading to a river at a bend. Proceeding along the latter fork for about four miles over rough ground I reached the river. This river is much like the Swan River, but much smaller, and I subsequently found that it was a branch of the Swan River. Upon the flats of this stream I found good feed. As the banks on the west side are steep and impossible for the construction of a road I proceeded along the river for about four miles until I could find a good place to go up the bank. I then turned northwesterly across country, passing through a great deal of brule and fallen timber to the trail along the lake shore. This trail was reached at about thirty miles from the Narrows, and followed sometimes along the beach and at other times cut across through the timber.

As no work would be required along the beach a temporary road might be made, but as it is liable to be flooded should the water in the lake rise it could not be chosen as a permanent road. After having seen the country I am of opinion that a road could be made without any very serious difficulties and at reasonable cost. A lot of exploring would be necessary in order to choose the best ground.

The Hudson's Bay post was reached on the 6th of October and we remained there until the 9th. One of my horses having got staked on the road I was obliged, while here, to purchase another. While at the lake I got all the information I could regarding the nature of the country lying between there and the mouth of the Macleod River. From what I learned it seemed that the only safe way to get through was to go southwesterly to Snipe Lake along the trail leading to Sturgeon Lake. This I did, skirting the muskeg on our left across Prairie River, which is about 80 feet wide with banks 10 feet high, and about fifteen miles from the Narrows. Prairie River runs through a prairie and bluff country. This is a good place for ranching, there being plenty of hay.

Snipe Lake is about forty miles from Slave Lake, the road passed over

being through good country. A belt of good spruce lies to the north west of the lake. The lake is about eight miles long and from five to seven miles wide.

Branching off from the trail here, and following the north side of the lake, and then striking across country as nearly as possible in the direction of the Macleod River, we travelled for thirteen days over rough and hilly country through muskegs and fallen timber. This country generally had been traversed by fire and there was fallen timber everywhere.

We came to the Macleod and Sturgeon Lake trails at a point where it crossed the Hawk River about twenty-eight miles from the mouth of the Macleod river. We forded the river at this point and followed the Lac St. Ann trail through a good country, portions of which have good soil and are open enough for farms.

As the horses were pretty badly used up on arrival at Lac St. Ann I left the party in charge of Corporal McDonald, to be brought in by easy stages, and, hiring a horse, I rode into Edmonton the next day. I there found Alex. Cameron, as foreman, and seven men had been engaged to proceed with the opening up of the road which had been decided upon, my instructions being to cut off the trees as close to the ground as possible but not to take the roots out. Winter was setting in, but as no snow had fallen the party had to start out with waggons. They had two teams, and rations for one month. They left Edmonton on the 8th November, and when I overtook them on the 19th they were making sleighs about four miles beyond the Pembina River, twelve days having been spent and no actual work done on the road. As the horses employed on the work were not accustomed to live on grass during winter, the provision of hay and oats for them was a very serious expense. And this not only in actual cost, but one man and team were constantly on the road hauling provinder for them. I remained with the working party until we had reached Clearwater Creek. With two Indians, two flat sleighs and what supplies I thought would take me to Lesser Slave Lake, I then started forward to mark out the road. By this time about ten parties proceeding to the Klondike had overtaken me. They were anxious to get on and carried instructions for me to do what I could to help them.

Having been told that the Kinnisao trail, which branched to the left from the one I had taken, would make a good waggon road, I wished to see it before laying out that portion of the road. I found it better than the one I had taken until I had passed Salteaux Creek for a short distance, when I saw that it would be impossible for a waggon road. By this time I was well on the road, the Klondikers following close behind and depending upon me to show them the way through to Slave Lake. As the working party could not get further than Salteaux Creek before I could return from Slave Lake I decided to go on to Swan River, get the Klondikers to go down it, and start again from the point where I had previously crossed Swan River to work towards Slave Lake and choose a road across the hills on my return. I did this and followed my old trail to the top of the ridge. Then, instead of turning to the right, I kept straight on but found some very bad coulees. On reaching the west branch of Swan River I found the banks too steep for a road on the west side, but after following down the river for about a mile I found a place where a road could be made up the west bank, with a likely looking country on the opposite side. Choosing a road up the hill for about a mile I struck a pack trail which I followed, marking deviations where necessary, to Driftpile River. This trail I afterwards found was

the Kinnisao trail which I had got back to. I went down Driftpile River and followed it to the settlement, as I was short of supplies. Obtaining these I struck across from the Narrows, taking as straight a line as possible, for the point where the trail crossed the Driftpile River. I had been told at the post that it was impossible to get across that way, but I found a very good country for it. The country is heavily wooded with birch and poplar up to ten inches. The soil is rich and the district would make a good farming country if the wood (which is not of much use) was taken off. A branch of the Driftpile River runs into the main stream at a distance of about two miles below where I struck it, and as there was a rough looking country lying between the branches, I thought it would be necessary to follow the river around the point and then up the main river to the trail. In doing this it would be necessary to cross the river three times, and in order to avoid this I searched for and found a road across country when I went back in the spring. This portion of the road is thickly wooded with birch and poplar, and had extensive spruce and tamarac swamps along the sides. From the crossing of the Driftpile River to the Narrows is about forty miles. There is good feed in the bottoms of both rivers, but not much elsewhere.

From the Driftpile River to the west branch of the Swan River the old trail was taken as a general line until within about a mile of the latter, where the road branched off to the left to get down to the bank. Generally speaking the country consists of gravel ridges wooded with jack pine; but there is some good soil bearing poplar and alder. The distance is about twenty-five miles. Water is plentiful and there is a fair amount of feed. From the west branch of Swan River to the main branch I laid out new road all the way, it being better and shorter than either of the trails. The timber, as a whole, is poplar and jack pine.

The road from Swan River over the hills was next undertaken, and in two days we reached the summit, having travelled over country that looked fairly good. As there was three feet of snow on the hills it was rather difficult to know what was underneath. For about three miles where, owing to there being jack pine, I thought it would be all right, in the spring I found the ground soft and was compelled to change the road and follow down a creek which has been named by travellers after me. The country is much broken and the timber poplar and jack pine. As it was snowing heavily the next day I could do very little towards laying out the road and got over to the trail as soon as I could, reaching camp the next day at Vermillion Creek.

I worked from there and again from Salteaux Creek and laid out the road to the summit of the hills. From Vermillion Creek to Salteaux Creek is about eight miles, and thence to the foot of the hills about five miles more. The country is all wash gravel covered with jack pine. As the hills are approached a heavy moss is met with. This moss holds the moisture, making the road wet and boggy. The hollows between the ridges are also soft.

After laying out the road to the top of the hill I returned to Edmonton, leaving what I considered to be sufficient supplies to allow the choppers to get to Swan River, from which point I had instructed them to return. I reached Edmonton on the 2nd February, and on the 24th the foreman and his party came in. He reported that two sacks of flour, which I had purchased and left to be taken back to camp by the returning team, had been stolen. As a consequence he was obliged to come in for supplies notwithstanding the fact that he had met, near the Athabasca, a load of supplies which I was sending out for a party of half

breeds who were going to work from the Swan River to Slave Lake. The horses of this party played out in the deep snow and they did not reach their destination. However, they did some good and necessary work this side of Deep Creek. The foreman went out again on the 26th, but returned on the 18th March, having been unable to get to Swan River, the snow being very deep and having a crust upon it. When I went out in the spring I found that the work done past Salteaux Creek was practically useless.

I started out again on the 23rd April with D. McMullen as foreman, and sixteen men, to push the road through. I am inclosing the diary kept by the foreman, whom I found to be an efficient and painstaking subordinate, and do not think I need make any further report concerning this trip.

On returning over the road I found, where there had been much travel, that the stumps, which had been cut off close to the ground, were now standing six inches above it owing to the earth at the sides having packed. To make the road at all passable these stumps must be cleared off. A lot of grading, draining and corduroying will also be necessary to make a good road. This will entail an expenditure of from four to five thousand dollars.

A number of families have already gone over the road to settle in the Peace River and Swan Lake districts, and as mining machinery is also now on the way to that country it is of vital importance that the road should be put in such a condition that it can be travelled at all times of the year.

There were put in on the road 104 bridges having a covering of 1,628 feet. Spruce and tamarac were used in their construction where these woods could be obtained.

The corduroy, which is of a permanent character, is 1,921 feet in length. About one mile of heavy brushing was done.

From Vermillion River to the Driftpile colours of gold are found wherever the gravel is prospected.

The timber along the road is of very little commercial value, and the country would be much better if it was burned out so that the grass would get a chance to grow.

A plan accompanies this report showing the road as nearly as it can be traced, taking into consideration the fact that no survey was made and that the scale is very small.

I have the honour to be, Sir,

Your obedient servant,

(Sgd.) T. W. CHALMERS, D.L.S.



J. S. DENNIS, Esq.,
Deputy Commissioner of Public Works,
Regina, Assa.

INNISFAIL, ALTA., Nov. 28th, 1898.

SIR,—

I have the honour to submit the following report of my explorations for a feasible route for a waggon between St. John's on the Peace river and the forks of the Nelson river.

On July 8th last I received a message from the Commissioner of Public Works, who was then in Edmonton, to go there by the first train. On reaching Edmonton I received from the Commissioner instructions for the above mentioned work and provided horses, supplies, etc., for the trip. I returned to Innisfail on the 9th to close up the work I had in hand when I received the Commissioner's message and to obtain some instruments and other articles that I needed on the trip. On the 11th I returned to Edmonton and found only one of the horses I had purchased in the corral, the others having broken out of the yard in which they were put and they were not found until the next day, July 12th. I got away from Edmonton on the 13th and reached the Athabasca river on the 17th. There I had to lay eight days on account of high water, the cable and tower of the ferry having been carried away and the ferry unable to run.

Mr. Dibble and party who were going to the Parsnip river on an exploration survey for railway purposes, and several others had reached the river two days ahead of us, and some fifty people finally gathered there before we finally got across. As soon as the drift wood stopped running we made oars or sweeps and rowed the ferry back and forth and were fortunately among the first to get over. We reached Lesser Slave lake on the 3rd of August and I there purchased two more horses as I found eight could not pack all the supplies and outfit required through a muskeg and swampy country.

I left the lake on the 4th, reached Peace River Landing on the 7th, got across the river the next day and arrived at St. John's on the 17th August, five days ahead of supplies, with the party and horses in good shape. Mr. Burbank, who had contracted to deliver our supplies at Fort St. John, arrived on the evening of the 21st, but I found the supplies were badly damaged excepting the beans, coffee and baking powder. The tea was destroyed, having been under water for some time, and the salt, which was packed in the same box, got mixed with it. Mr. Burbank, however, gave me 15 lbs. of his Indian trade tea in its place.

The next morning, August 22nd, I set the party to work getting what supplies we required up the hill from the river, a climb of about 800 feet, which was a hard day's work on the horses. I did not take all the supplies (over and above what was necessary to bring the party back home) with me, as I was told by the Indians, as well as by Mr. Burbank, that our route lay over a hard country to get through. I therefore concluded not to load too heavy as I could send some of the party back for the remainder if I found they were required. Mr. Burbank, who was to act as guide, could not leave for a day or two, but some Indians who were camped at Pine river when we came into St. John's, pointed out the trail that Burbank was to take for us, and which led to his trading post. They also told me that Mr. Burbank had never been more than a few miles past his own post, and this statement I afterwards found to be true. They said that they never took their horses but a

short distance on the other side of Hay lake which is 85 miles from St. John's, as there was no feed in what they called "the big muskeg." That I found to be true also.

Having decided not to wait for Mr. Burbank I left St. John's on August 23rd and travelled east about seven miles on the same trail we came in on, which crosses Fish creek at its confluence with Pine river, where the banks are at least 500 feet above the bed of the streams, both of them being easy to ford at that time, but I believe troublesome at time of high water. The bed of Pine river is 250 feet and that of Fish creek about 75 feet in width at this point. From here the trail runs in a northerly direction through an open and undulating country until we cross Pine river 32 miles from St. John's. The banks at this point are about 350 feet high. It was here that our guide, Mr. Burbank, overtook the party on the evening of August 24th, and next day we travelled through a more rolling country until afternoon when our guide got "mixed" and led us over the trail which the Indians use in the winter time when travelling with dogs and sleighs, when they keep in the muskies in order to avoid the fallen timber that obstructs the summer trails on the high ground. In consequence of this mistake we had to pack through twelve miles of terrible muskeg, but our horses being in good condition after their rest at St. John's they got through all right, although it was very hard on them. We camped that night in the muskeg near a little meadow. The next morning I dismissed one of the men of my party as he was almost useless and wanted me to let him go. I thought he wanted to go mining so paid him off.

On leaving camp next morning I forgot my compass, but after travelling about a mile I missed it and went back for it, telling the men to go on and that I would overtake them after getting the compass. When following up after them I was surprised to meet my party heading south. They told me the guide had made them turn back, and that one of the men (Mr. Rainey) had tried to persuade him that by doing so they would be going back to St. John's. The guide, however, got angry and said that if they wanted to get to the forks of the Nelson they had better follow him. So to save trouble they turned back, knowing that they would meet me and that I would straighten things out. I had, however, quite a job in getting the guide headed again in the right direction, but he finally allowed that it was his compass that bewildered him. He did not get finally straightened out until we got to the forks where the summer and winter trails meet again. After that both the party and myself lost confidence in him. Before leaving St. John's he gave me to understand that it would be a good idea to take with us a sack of flour and ten or twenty pounds of tea and a few pounds of sugar for the Indians near his trading post, and said if I did not do so they might give me trouble. I told him that I had no instructions to feed the Indians in that way and that I would take chances. That afternoon we came to quite an encampment of Indians, fifteen or twenty in all, but were without the presents I had been told it would be necessary to give them. We found them very kind. They had killed a large moose that morning and made me a present of about 60 pounds of the best cuts. In return I gave them a few pounds of flour and a little tea, which the old chief received with many "ughs." We camped that night on the banks of a good sized creek running north into a branch of the Pine river.

At noon on August 25th we reached Mr. Burbank's trading post, a log hut 10 by 12, and camped the same night at Hay lake, which is the head of one of the branches of Hay river, 85 miles from St. John's. My

next camp was at the crossing of what I called "Burbank Creek," 10 miles from the lake. On August 29th we crossed the Divide. On the summit there is a large marsh with a pond in the centre, which I called "Summit Lake," having the head waters of a branch of the Pine and the Nelson rivers. We pitched camp on what the Indians informed our guide was the east branch of the Nelson River, 20 miles north of Hay Lake, having travelled through a country which is rather rough, several ravines running eastward into both streams that flow north and south. Up to this point the trail is fairly good, the ground not too soft except for short distances, but from here we had to cut out the trail. Mr. Burbank, the guide, suggested that I should go with him to the top of a high hill which we could see about three miles north of the camp, so that I might be able to form an opinion what the country ahead was like. We climbed the hill and I obtained a splendid view of the country looking northward. The country appeared to slope in that as far as the eye could see, but the whole country appeared to be a large muskeg covered with small scrub spruce and tamarac.

The trail that Mr. Burbank had previously led the Fresno party north on runs over this hill, and on a tree beside one of their camping places on the top of the hill was written in lead pencil the name of the party and that they were there on May 27th and June 25th, 1898, evidently what is called "doubling the trail" in order to get their supplies through.

A Mr. Stephenson, of Manitoba, and a Mr. Johnston, of Ontario, subsequently told me they were at Fort Nelson when the Fresno party arrived there, which was on August 3rd. We saw some of their horses dead along the trail and their pack saddles, etc., thrown away. I believe they claimed that Burbank was responsible for their hardship and delay. He told me that he left them 30 or 40 miles in a northerly direction from the hill which we ascended and that the country was not fit for a pack trail let alone a waggon road, but that I could take any route I liked. I told him my instructions were to follow him. He replied that from that point north I knew as much about the country as he did, but added that he thought the east side of the river (we were then on the west side) might be a better country to travel through.

The next morning we began cutting a trail down the creek (or river, as our guide called it) and managed to keep the camp up and make about five miles a day for about 25 or 30 miles. We only made, however, about 15 miles in a direct line, as we were following our guide faithfully around nearly all the bends of the stream which is very crooked (as you will see by referring to the accompanying plan), and we could not keep out from the stream on account of the terrible muskeg, which was impassable. Finally Mr. Burbank came to me and said he was not prepared to go any further and that I could follow along the river as well without him as with him, and asked me to give him a note to the Commissioner certifying that it was with my consent that he left the party. I refused. Then he got angry and finally left us on September 3rd saying he did not expect that I could recommend that route anyway and that his principal object in having anything to do with it was to get the waggon road to pass by his trading post.

We kept on cutting trail for a couple of days but found the country get worse as we went down stream, so I stopped cutting and Mr. Rainey and myself went ahead to explore but found nothing but muskeg and no feed for stock, except a little of what is called "muskeg grass," on which I found our horses failing very fast. I would judge that this muskeg

extends some 50 or 60 miles north and south, and 30 or 40 east and west, with an odd short ridge scattered through it.

I concluded then to try another route and returned to St. John's, arriving there on September 12th. I made up my mind that I had supplies sufficient for a trip to the west branch of the Nelson River, with the exception of a few small articles that I would get out of the stores left at Mr. Burbank's, but as he was away making hay and nobody around his place except an Indian woman who did not know anything about the supplies we had left there, I had to do without them.

Next morning, September 13th, I started north from St. John's on what Mr. Gunn, of the Hudson's Bay Company, called the "Montny trail." Several parties of Klondikers had gone north on this trail ahead of me, and we got a fairly good trail through the west branch of the Nelson without much trouble. We passed some of them on the way, but everybody was more or less interested in making the trail passable, so that we got to the river on September 22nd. Several parties had built boats and rafts at this point and floated down the river, sending their horses to Pine river or St. John's to winter. Others had gone down with pack horses, which it is possible to do at this time of the year, as the river bed is 400 feet wide with only 100 to 150 feet in width of water in it, so that pack horses can get along the bed by crossing and recrossing on the bars when necessary, the water being only from one to two feet deep in those places. They were also able to cut across the points, many of which have a high water channel through them that was dry at this season, and makes a good road in low water. I could see by the trees and driftwood, etc., that the water had been more than 30 feet higher than it was at that time, and during high water stages it must be a vicious river, for from the point where we came to it with our trail down to a short distance above the forks it falls very rapidly. Below that it is more level and the water is deeper and runs more smoothly. The general bearing of the trail from St. John's to the west branch of the Nelson river is about north, 30 degrees west. The first five miles from St. John's to Fish creek is open prairie; thick timber is then met nearly all the way to the south branch of Pine river, which is 40 miles from St. John's. There is open prairie in the valley of this stream on both sides, and it has low banks. From there to Big creek, 38 miles, it is alternately timber and prairie in patches, and several miles further on we came to the north branch of Pine river, 85 miles from St. John's, which is the largest branch. The bed of this stream is 200 feet wide, banks 30 feet high, and the flow of water at that time permitted of its being easily forded. Some people call this stream Hay river, but from enquiries which I made I believe it to be a branch of the Pine. From there on to Summer lake, 30 miles further north and over the Divide, there are only a few patches of open prairie; the country is principally covered with scrub, spruce, tamarac and jack pine. From the lake to Nelson river, a distance of 35 miles, there are quite a number of streams running through ravines from 20 to 30 feet deep. Most of them run into a large creek that we could see at times to the east of the trail and which joins the Nelson about 25 or 30 miles above the forks. There are patches of muskeg scattered along the last 40 miles before reaching the river. The whole distance from St. John's to the Nelson river is about 150 miles, and from the point where we struck the river down to the forks 52 miles.

Our horses were still feeling the bad effects of their trip on the east branch, so I left them to rest with two of my party to take care of them,

while Mr. Rainey and myself went down to the forks. I arranged to go down to the forks with the Wyoming party in their boats. They were very kind to me indeed, giving us about fifty pounds of moose meat which they had killed the same day we got to the river. There were eight, all told, in their party; three members had gone back to St. John's where they intended to cut hay and winter their horses. The other five made two splendid boats out of spruce lumber which they cut with a whip saw, there being any amount of fine spruce and cottonwood, some of it three feet in diameter, growing in the valley of the river. We got away the next day, September 23rd, but had not gone many miles before it was found that the boats drew too much water to get over some of the bars. The party then concluded to build a raft and lighten the boats, as they had 3,000 pounds in each, and as we heard from other parties that it was only between twenty-five and forty miles down to the forks I concluded to go on with packs on foot. I took a rough bearing of each bend of the river following along the right hand side, the water being too cold to cross and recross on the bars. Sometimes the river winds into a high cut bank and whenever that occurred we had some hard climbing to do. However, we worked our way down to within a short distance of the forks, but in order to get round a cut bank we had to climb quite a mountain, and when on the top we could see where the two branches of the river joined. On account of the distance being greater than I expected our supply of provisions got very low, and, as we were very tired as well, I decided to return from where we were. I would have liked to put a finger board up (on a point between the two rivers) with the distance up to our trail, but had no trouble in getting a promise that it would be attended to as several parties were making their way towards the Liard river with boats, rafts and pack horses. About twenty miles up the west branch from the forks a Mr. Tottingham and his party were camped, and intended to stay during the time his men and horses made the trip to St. John's for the remainder of their supplies. He showed me a trail near his camp which he said he tried to go down the river on but it led him to the east branch where it bore off to the south-east, so he turned back. We could see where it crossed the river in a westerly direction. He said the distance between the two branches on this trail was about twenty miles. I made further enquiries about this trail and was told that it ran to Fish lake, which is west of Fort Nelson, but could not learn where it led to eastward. I went out on it a mile or so and noticed recent axe marks made by axemen who were evidently not Indians. I have marked this trail on the accompanying plan. On September 29th we got back to our camp and left next day for St. John's, arriving there October 7th.

A fair waggon road can be built along this trail from St. John's to the Nelson River without great expense, but in case a road is built I would recommend that it branch off forty or fifty miles east of St. John's on the Dunvegan road, and keep north of the Pine river, which would both shorten the distance and avoid the terrible gulches. Then again, when near the west branch it would keep to the right, following the valley of a creek that flows into the Nelson river some twenty-five or thirty miles above the forks. (See dotted line on plan showing the proposed route.)

On reaching St. John's I found Mr. Burbank's establishment closed. He had gone on a trading trip to Hudson's Hope or Fort Graham, and left no one in charge. I could not get the remainder of my supplies, but a Mr. Cashman, the gentleman who is in charge of Brick Bros.' trading post there, came to my relief and let me have some supplies. I gave him an order on Burbank for the supplies left with him, which I hope

he received, as it was a kindness to exchange supplies in that way for me.

On October 8th I started two of the party with the horses and enough provisions to take them to Peace River Landing over the trail, while the other man and myself built a raft, put all the outfit on it and started down the river, arriving at the Landing (24 hours ahead of horses) October 15th. The horses came through in much better shape than they would have done if the outfit had been packed through. One of the horses, however, never recovered from the trip on the east bank of Nelson river, and coming back from the west branch it took sick and I had to leave it twenty miles north of St. John's in good feeding grounds. I arranged with a man named Sullivan, who had occasion to go up the trail, to bring it down to St. John's if possible and turn it out with his band, but it was so poor and weak that I do not expect he would find it alive. On October 17th we got the horses across the river at Peace River Landing, which was quite a job, for it was snowing and freezing, and hard on the horses. I got the two carts that I had left in charge of the Mounted Police at Peace River Landing when I was going north and brought them to Lesser Slave lake. I left them and two sets of cart harness there, in charge of Messrs. La Rue and Picard, the road being bad and the horses very thin, and I was afraid I could not get through with the carts. We reached the lake on the 22nd of October and obtained some barley there, which was a great help to the horses coming through to Edmonton, where I arrived on the evening of November 4th, leaving the party at St. Albert, they getting in next day. As soon as I got in I wired the Commissioner of my arrival, and hearing nothing from him I stored the outfit and arranged for wintering the horses. I went down to Innisfail on November 8th, and in a day or so, as I was getting to work on this report, I received instructions to sell the outfit. I returned to Edmonton but found it almost impossible to get a purchaser, the highest bid I got being only \$100.

I met a gentleman on the Peace River Landing when I was coming back who was brought up in the North-West, his father being in the H.B. Co.'s employ. He had just arrived from the north for his winter's supplies. His route is down the Peace river 125 miles from the landing, when he takes what he calls the "Mackenzie trail," which leads in a westerly direction to what he names "Little Slave Lake," where he intends to winter. He sketched on my map the position of this lake and river of the same name, and also of Buffalo lake and river, both streams being tributary to the Hay river. Next season his intention is to go via Fort Nelson up the Liard river. While I was in Edmonton Mr. Oliver, M.P., made me acquainted with a Mr. Howie, an intelligent gentleman who has done considerable travelling in the vicinity of Fort Nelson and Fish Lake. He sketched the position of Sicamine river on the accompanying plan.

Your obedient servant,

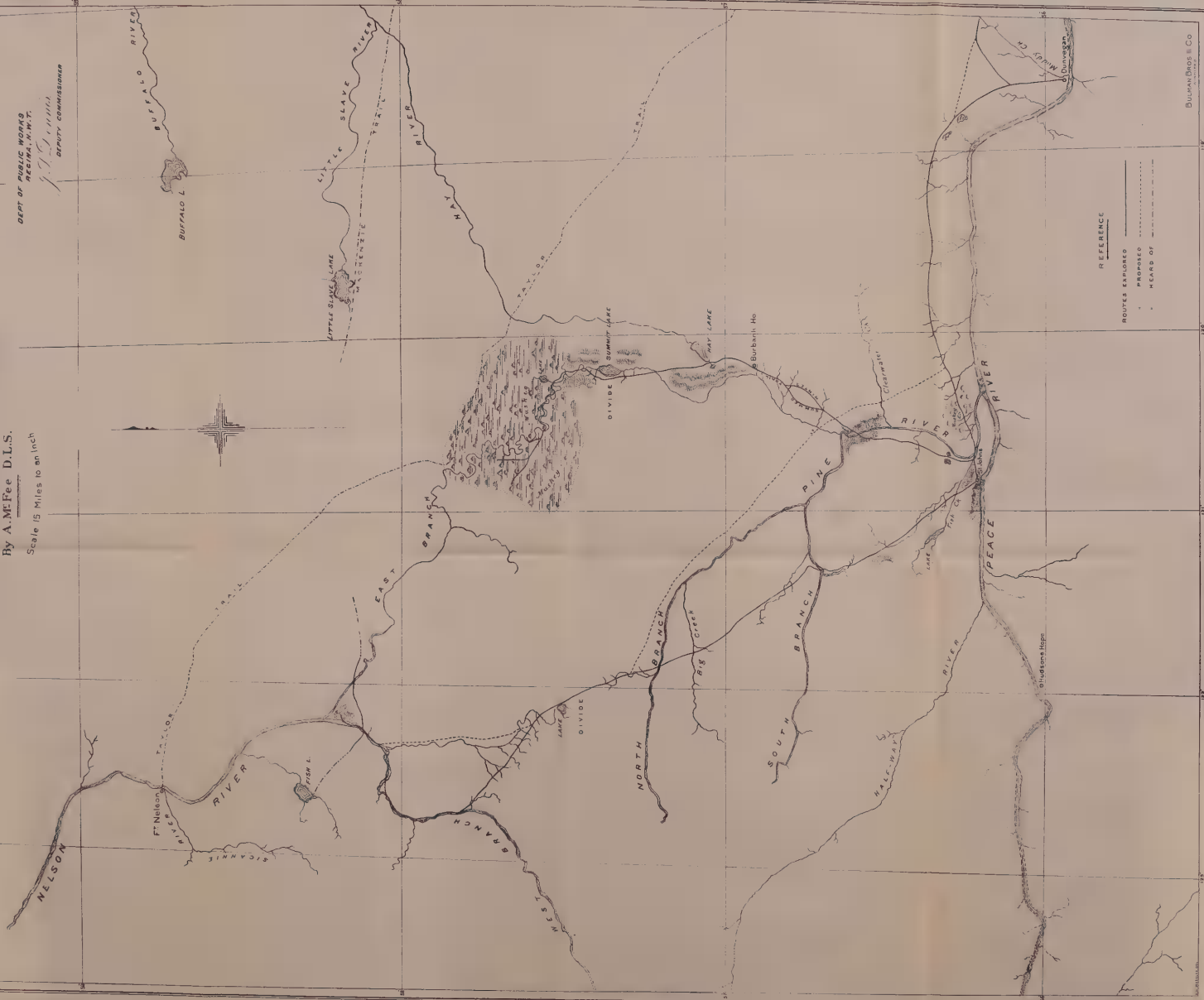
A. MCFEE, D.L.S.

MAP

SHOWING
EXPLORATORY SURVEYS
PEACE AND NELSON RIVERS
By A. McFee D.L.S.

Scale 15 Miles to an Inch

DEPT. OF PUBLIC WORKS
ALBANY, N.Y.
J. J. HALL
DEPUTY COMMISSIONER



REFERENCE

ROUTES EXPLORÉD

PROPOSED

HEAD OF

Р. А. М.

ПЕЧАТНОЕ УПРАВЛЕНИЕ

СРЕДНИЙ ВОЗРАСТ

21.00 - 21.00

СРЕДНИЙ ВОЗРАСТ
21.00 - 21.00

СРЕДНИЙ ВОЗРАСТ

СРЕДНИЙ ВОЗРАСТ

In connection with the completion of the further work needed to put the waggon road from Edmonton to Peace river in good shape, as reported by Mr. Chalmers in the foregoing report, and also with reference to the opening up of the road from Peace river to Nelson river, it may be noted that an arrangement has been made with the Dominion Government under which \$10,000 is to be spent during the coming year through this Department in completing these roads and in making the necessary detail surveys to permit of their being set aside as public highways.

During the past fiscal year the sum of \$7,340.42 was spent in making surveys, but this expenditure has not enabled us to make much headway in disposing of the large number of surveys urgently needed. In the past it was the custom in many districts to grade roads down hills or ravines when the ordinary road allowances could not be followed, without going to the trouble of first having the diversion surveyed or the title thereto obtained, and also to locate bridges at suitable crossings of streams without providing a road to or from such bridges. These roads must now be properly surveyed and set aside as public highways, and the work connected therewith will entail a considerable amount of expenditure for some seasons.

We are also called upon to make surveys to determine the areas which are flooded by the large number of dams which have been constructed in Eastern Assiniboia. The number and location of these dams and the important part they play in connection with the water supply in the eastern portion of the Territories is dealt with at length further on in these pages, but up to the time of the organisation of the department there seems to have been no realisation of the necessity for a proper survey and acquirement of the title to the areas flooded by the erection of these dams, and as a consequence we now have on our hands some two hundred surveys to make.

At the time of the construction of the larger number of these dams the necessity for surveying and obtaining the title to the lands flooded was not pressing, as most of these lands were owned by the Crown or the Canadian Pacific Railway Company. The increase of settlement, and the necessity of giving these dams a legal standing by recording them under the provisions of the North-West Irrigation Act, now require that we should properly survey and obtain the title to the flooded areas so as to ensure general and free access by the public to the water stored in these reservoirs.

It is not probable that we will be called upon in future to survey and set aside as public highways many of the old trails not already surveyed. It is now evident that in many cases the sections in certain districts have been unnecessarily cut up by these old trails being surveyed across them, and in the eastern or prairie portions of the Territories the wooded and broken nature of the country renders it advisable to adopt many of the old travelled trails as main highways, but the larger number of these old trails in those portions of the Territories have already been surveyed.

Associated with the question of surveys is the issue of maps. Up to the time of the organisation of the department no distinctly Territorial map on a large enough scale for purposes of reference had been issued, and as the maps issued by the Department of the Interior were some years behind the current land surveys, railway construction and other general information required by the public, it was decided to issue a large sized map of the Territories showing all the latest information. This

map has lately been completed and lithographed and ten thousand copies obtained for distribution. It is not, of course, as fine a map as some of the expensive engraved editions of general maps showing the Territories which have been issued by the Dominion Government, but it is a very good sample of photo-lithography and from the Territorial standpoint has the merit of being up to date both with regard to surveys, topographical and other general features, and shows the boundaries of the Electoral Districts as fixed by the Ordinance respecting the Legislative Assembly of the Territories passed at the last session of the Legislative Assembly.

Connected with the question of the survey of roads and the providing of proper rights of way for public travel there is a feature of our departmental work that is deserving of some mention. I allude to the question of closing up road allowances or surveyed highways that are not at present needed by the public. This question is one that has caused much trouble and many disputes, particularly in the ranching portions of the Territories, and up to the time of the organisation of the department had not been dealt with upon any defined system.

It will, of course, be understood without any particular explanation, that many of the road allowances laid out upon arbitrary lines are not, owing to natural obstacles, possible for public travel, but having been set aside for that purpose they cannot be occupied or fenced in without some legal authorisation. In the ranching districts this condition causes much inconvenience, for, no matter what area of land a cattle owner may purchase or lease for grazing purposes, his ability to fence the purchased or leased area is confined to the sections divided by road allowances even although these road allowances may be unnecessary or unsuited for public use. To enable us to deal systematically and promptly with this question regulations were prepared as soon as the control of the road allowances was finally delegated to the Territorial Government in 1897, under which we receive applications on proper forms from those who wish to fence in and occupy road allowances not needed for public use, and these applications, having in each case been specially examined into and reported upon at the expense of the applicant by a surveyor resident in the locality of the roads affected, are finally considered in the department and refused or granted as the circumstances justify. If granted, a formal certificate (on printed form) is issued under which the applicant is authorised to fence in and occupy the road allowances or surveyed highways affected until such time as he is notified that they are needed for public travel. These applications are properly recorded in a specially prepared register, and, as has been intimated in the synopsis of departmental work contained in the earlier pages of this report, seventy-two applications of this kind were received and dealt with during the past year.

The adoption of these regulations, and the prompt dealing with applications filed under them, has caused much satisfaction, particularly in the grazing districts of the Territories, as there were in those districts at the time of their adoption many disputes regarding fenced road allowances and surveyed roads that had been outstanding for a long time, and some of these disputes had caused much bad feeling and serious trouble in some instances.

The accompanying schedule shows the certificates of permission to fence road allowances or surveyed highways so far granted under the regulations above referred to.

SCHEDULE OF CERTIFICATES TO OCCUPY ROAD ALLOWANCES OR
SURVEYED HIGHWAYS GRANTED.

NAME OF APPLICANT.	DESCRIPTION OF ROAD CLOSED.	NO. OF CERTIFICATE
Garnett, Louis O	Road allowance between Secs. 34 and 35-6-2-5.	
Telford, Robert Taylor	C. & E. surveyed road in N.E. $\frac{1}{4}$ 26-49-25-4, 1.32-100 acres	
Davidson, G. S., et al, petition ..	Portion Wood Mountain road in Sec. 7-18-14-2 and Sec. 1 and part of N.E. $\frac{1}{4}$ Sec. 2-18-15-2.	
Brown, Wm., et al, petition, (Municipality of South Qu'Appelle) ..	Portion Wood Mountain road in Secs. 3 and 4, Tp. 17-16-2	
Oliver, Frank	Portion of road allowance in N.E. $\frac{1}{4}$ 2-51-24-4, about 150 yards	
Robertson, H. H., et al.	Portion of C. & E. road in Tp. 52-24-4, lying between N. limit of Indian Reserve and S. limit of South Edmonton townsite	
Shiart, John H	Portion of road forks to Prince Albert running through N.W. $\frac{1}{4}$ 16-49-23-2	
Hull Bros. & Co.	Road allowance in Fish creek farm Tps. 22 and 23-29-4 and Tps. 22 and 23-1-5	
Page, Spencer	Road allowance in Secs. 11 and 12-12-31-1, N. of Pipestone creek.	
Page, Spencer	Road allowance N.W. $\frac{1}{4}$ 12, S.W. $\frac{1}{4}$ 13-11-30-1	
King, P. W.	Road allowances in E. and N.E. $\frac{1}{4}$ 14; Fr. S.E. $\frac{1}{4}$ 23 S. of river; W. of river on N. boundary, Sec. 23, R. 1, W. 5.	
Matthias, E. E	Road allowance S. of S.E. $\frac{1}{4}$ Sec. 6-41-26-4	
Alpaugh, E.	Portion of Pigeon lake road in S. $\frac{1}{2}$ Sec. 24, Tp. 49-27-4	
Content, Arthur A	Portion of C. & E. road through Sec. 20, Tp. 35, Rge. 28, W. 4	
New Oxley Rancho Co.	Road allowance running E. & W., N. of Secs. 20, 21 and 22, Tp. 6, R. 25, W. 4th, between Kootenai and Belly rivers; also road allowances between Secs. 19 and 20, 20 and 21, and 28 and 29, same Tp.	
Herron, John	Road allowance N. of N.E. $\frac{1}{4}$ Sec. 23-6-30-4.	3
Macleod, Martin	Part of road from Pincher creek to Crow's Nest Pass in N.W. $\frac{1}{4}$ Sec. 28-6-1-5; also road allowance E. of Sec. 28	
Neff, J. R.	Part of Moosomin-Ft. Ellice road in Sec. 4-14-31-1	
Neff, O.	Part of Moosomin-Ft. Ellice road in Sec. 9-14-31-1	
Banister, A. E.	Road allowance between Secs. 4 and 5 and 5 and 6, Tp. 22, R. 28, W. 4.	6
Nicoll, Jas.	Part of surveyed road in Sec. 30-6-29-4	8
Canadian Pacific Ry. Company ..	Part of road allowance at Gleichen in S.E. $\frac{1}{4}$ Sec. 13-22-23-4.	7
" " "	Part of road allowance between N.W. $\frac{1}{4}$ Sec. 25 and N.E. $\frac{1}{4}$ Sec. 26-16-5-2 at Broadview.	
" " "	Road allowance between Secs. 32 and 33-16-26-2 at Moose Jaw	
" " "	Road allowance between Secs. 24 and 25-15-14-3 at Swift Current	
Macleod, Norman T.	Road allowance between Secs. 27 and 28-6-1-5.	
Macleod, Norman T.	Part of road from Pincher creek to Crow's Nest Pass at N.W. corner Sec. 28-6-1-5	
Andrews, J. McK.	Road allowance N. and E. Sec. 32-21-28-4	
Andrews, T. H.	Road allowance N. of Secs. 32 and 33-21-28-4	
Samson & McNaughton.	Road allowance between Secs. 33 and 34-24-2-5; road allowance between Secs. 34 and 24-2-5 and Sec. 4-25-2-5; road allowance between Secs. 34 and 24-2-5 and Sec. 3-25-2-5	1
Calgary & Edmonton Ry. Co.	Road allowance S.W. $\frac{1}{4}$ Sec. 5-33-2-5; road allowance N.W. $\frac{1}{4}$ Sec. 31-32-2-5	

SCHEDULE OF CERTIFICATES TO OCCUPY ROAD ALLOWANCES OR
SURVEYED HIGHWAYS GRANTED.—*Continued.*

NAME OF APPLICANT.	DESCRIPTION OF ROAD CLOSED.	NO. OF CERTIFICATE
Gareault, Ludger.....	Part of old road from Pincher creek to mountains in N.W. $\frac{1}{4}$ 35-6-30-4	46
Scobie, Capt. N. F. M.....	Part of road from Macleod to Pincher Creek, in S.W. $\frac{1}{4}$ 25-6-30-4	
Cameron, Sir R. W.....	All the road allowances within that part of Tp. 10-19-4 which lies S. of Belly river.....	2
Troughton, Jno. E.....	Road allowance between Secs. 1 and 2 and between those portions of Secs. 11 and 12 S. of Bow river in Tp. 22-29-4.....	5
Shattuck, W. T.....	Road allowance S.W. $\frac{1}{4}$ Sec. 27-21-28-4, adjoining the Indian Industrial School at Dunbow.....	
Lineham, John.....	Road allowance between Secs. 28 and 29-20-29-4 and Macleod trail, through Sec. 29, lying N. of S. bank Sheep creek.....	4
Calgary Water Power Co.....	Road allowance on island in Bow river between Secs. 21 and 22-24-1-5	
McLaren, Peter.....	Part of Macleod trail, S.E. $\frac{1}{4}$ Sec. 25-6-30-4.....	8
Thompson, John.....	Part of road allowance W. of High river between Secs. 9 and 16-21-28-4	9
Canadian Land and Rancho Co.....	Road allowances at their Swift Current farm Tps. 14 and 15, Rges. 13 and 14, west 3rd meridian.	10
" ".....	At Gull lake farm, Tps. 12 and 13-19-3	11
" ".....	At Rush lake farm, Tp. 17, Rges. 10 and 11-3	12
" ".....	At Dunmore farm, Tps. 11 and 12, Rges. 4 and 5-4	13
" ".....	At Crane lake farm Tps. 12-13, Rgs. 22-23 West 3rd Meridian.....	14
" ".....	At Stair farm, Tp. 13, Rgs. 6 and 7 West 4th.....	15
Wallace, R. A.....	Between Secs. 7 and 8, 17 and 18, and 17 and 20 Tp. 19, Rg. 28, West 4th Meridian	16
Walters, Percy.....	Road allowance on N. and W. sides of N.W. $\frac{1}{4}$ 10-6-1 West 5.....	17
Bell, Donald.....	Road allowance along E. boundary N.E. $\frac{1}{4}$ 12-6-1-5	19
Bell, L.....	Road allowance E. side Sec. 1, and S. $\frac{1}{2}$ Sec. 12, Tp. 6-1-5	
Bell, L.....	Road allowance E. side Sec. 5, Tp. 6-30-4	20
Christie, R. J.....	Road allowances E. Secs. 11 and 14, N. Secs. 12-11, Tp. 4, Rg. 29, West 4th Meridian	18
City of Calgary.....	496 feet of road allowance between Secs. 14 and 15, Tp. 24, Rg. 1, West 5th Meridian, at crossing of C.P.R.	
Hatfield, H. M.....	E. boundaries Secs. 3, 4, 5, 8, Tp. 4, Rg. 28, W. 4th, and E. boundaries Secs. 32, 33, Tp. 3, Rg. 28, W. 4th, N. boundaries Secs. 32, 33 and 34, Tp. 3, Rg. 28, W. 4	21
Canadian Land and Rancho Co.....	W. of Secs. 10, 11, 14, N. of Secs. 10, 11, Tp. 23, Rg. 27, W. 4th Meridian; W. of Secs. 3, 10, 14 and N. of Secs. 10, Tp. 22, Rg. 28, W. 4th; and N. of W. $\frac{1}{2}$ of Sec. 34-21-28-4, Langdon.....	22
" ".....	At Namaka farm, Tps. 22 and 23, Rgs. 24 and 25, W. 4th	23
Canadian Pacific Ry. Company.....	Portion of road allowances running east and west crossed by C.P.R. between Secs. 10 and 11 and 14 and 15, Tp. 18-16, West 2nd.....	
Alberta Rancho Company.....	Road allowance N. boundary Fr. Sec. 20-5-30-4, 2.95 acres.....	24
" ".....	N. boundary Fr. Sec. 24-5-1-5, 5.81 acres	25
" ".....	Road allowance E. boundary N. $\frac{1}{2}$ Sec. 13-5-1-5, 4 acres	

SCHEDULE OF CERTIFICATES TO OCCUPY ROAD ALLOWANCES OR
SURVEYED HIGHWAYS GRANTED.—*Continued.*

NAME OF APPLICANT.	DESCRIPTION OF ROAD CLOSED.	NO. OF CERTIFICATE
Alberta Ranche Company.....	Southerly 10 chains of road allowance Sec. 29-5-30-4, 1.05 acres	27
“ “ “	Road allowance E. Sec. 24-5-1-5, 8 acres.....	28
“ “ “	“ “ E. boundary S. $\frac{1}{2}$ 21-5-30-4, 4 acres	29
“ “ “	“ “ E. “ S. $\frac{1}{2}$ Sec. 15-5-30-4, 4 acres	30
“ “ “	Road allowance E. boundary Sec. 20-5-30-4, 8 acres.....	31
“ “ “	Road allowance N. boundary, Sec. 21-5-30-4, 8.09 acres	32
“ “ “	Road allowance N. boundary, N.E. $\frac{1}{4}$ Sec. 10-5-30-4, 4 acres	33
“ “ “	Road allowance N. boundary, Sec. 11-5-30-4, 8 acres	34
“ “ “	Road allowance E. boundary, N. $\frac{1}{2}$ Sec. 10-5-30-4, 4 acres.....	35
“ “ “	Road allowance E. boundary N. $\frac{1}{2}$ Sec. 16-5-30-4, 2 acres.....	36
“ “ “	Road allowance E. boundary N. $\frac{1}{2}$ Sec. 17-5-30-4, 4 acres.....	37
“ “ “	Road allowance southerly 26 chains E. boundary 25-5-1-5, 2.60 acres	38
Smith, W. E.....	Road allowance E. boundary, Sec. 10-9-2-5	39
Brown, H. M. & W. H.....	“ “ “ “ “ 5-5-23-4.	40
Alberta Ry. & Coal Co.....	“ “ “ S. of Secs. 5 and 6-9-21-4; road allowances of W. S. $\frac{1}{2}$ Sec. 6-9-21-4; part of road allowances S. of Sec. 1-9-22-4; part of road allowance W. of N. $\frac{1}{2}$ Sec. 31-8-21-4.	41
Riddick, George.....	Part Macleod-Lethbridge road, Sec. 18-9-25-3.	42
Genge, Colin.....	Part Macleod to Calgary road, N.E. $\frac{1}{4}$ 24-9-26-4.	43
Jas. Johnson & D. J. Bruce.....	Road allowance between Secs. 2-3, Tp. 26, Rg. 4, W. 5th Meridian	44
W. Julius Hyde.....	Road allowance between Secs. 6-10-26-4 and 1-10-27-4	45
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William Miller.....	Trail crossing S.E. corner N.E. $\frac{1}{4}$ 17-47-27-2.	47
W. F. Meyers.....	Road allowance W. side Sec. 16-44-20-2	48
The Brackman & Ker Milling Co.	Permission asked to build railway switch across East Railway Ave. from C.P.R. main line to Block 87, South Edmonton.....	49

PURCHASE OF AND REPAIRS TO TOOLS AND IMPLEMENTS.

In carrying on our public works each year a large number of tools and implements of different kinds are required. Among these may be mentioned, in addition to the usual small tools, road grading machines, wheeled scrapers, slush scrapers, brush ploughs, tools and tackle for erecting steel bridges, and tools for use in putting pumps and fittings in deep public wells. We now have on hand 23 road grading machines, a small number of wheeled scrapers, and a great many slush scrapers. These tools and implements are a considerable trouble to keep in repair and to keep proper track of, and, like all portable property, the smaller tools are easily lost or destroyed and have to be repeatedly replaced. No

complete schedule of this class of Government property has been kept in the past, but we are now endeavouring to properly list and schedule all tools and implements so that they may be charged from time to time to the foreman having them in use and properly accounted for by him.

The eastern and open portion of the Territories are specially adapted for the use of grading machines owing to the almost total absence of stones. The machines we have are, with one exception, of the latest and most improved kind, and if properly handled do splendid work. Last year we adopted the system of providing these machines, and foremen, for use in the local improvement districts in assisting the residents to do their road work, and the results proved very satisfactory. The number of these districts has increased so rapidly that to carry out this system during the coming season will necessitate the purchase of several new grading machines.

CONSTRUCTION OF DAMS TO FORM RESERVOIRS FOR THE STORAGE OF WATER.

In the early days of the settlement of many of the eastern portions of the Territories the probability of there being a scarcity of water in future years for domestic or stock watering purposes seemed very remote. The early settlement followed a series of wet seasons which had left all the swamps and lakes full of water, and many streams that are now only streams in name then had an abundance of running water during the whole year. Finding this abundance of water, districts were settled which the succeeding long series of dry seasons left without any surface water, and failing to obtain wells at a reasonable depth much hardship to the settlers has naturally resulted. Owing to this trouble the original settlers in many of the districts abandoned their claims for others in localities where the water supply was more permanent, but the ever extending settlement and demand for land in the wheat producing area resulted in these abandoned districts being again settled in spite of the known scarcity of water supply. As a consequence, at the present time, in the eastern and south-eastern portions of the Territories, no other question with which the department has to deal is of such widespread and general importance as the problem of providing water for domestic use and stock watering purposes. This question has been a pressing one for some years and much time and money have been spent in trying to solve the problem. An attempt was first made to meet the difficulty by providing test augers and well boring machines of different kinds with which to determine the possibility of obtaining water by sinking wells. These machines were operated extensively in some districts and proved valuable in certain localities in locating water supplies which were subsequently made available by digging wells, but in other localities the use of these test augers only served to emphasise the scarcity of water by failing to locate any at a reasonable depth, and other means had to be adopted to endeavour to provide for the shortage of water in these localities. The system adopted involved the construction of dams on the small streams or ravines so as to create reservoirs in which the flow in these channels during the time of melting snow or spring rains might be stored until the later and dry period of the season. In districts where there were no streams or ravines available reservoirs were excavated in low spots on the prairie, and provision made to cause the drifting snow to accumulate at these points so as to fill the reservoirs when the snow melted. By this system water has been provided in many districts where it was found impossible to obtain it by other means, and in carrying out

the system some one hundred and ninety-one dams or reservoir excavations have been constructed.

A schedule of these dams and reservoir excavations is given herewith. This schedule, like all those including works completed before the organisation of the department, is probably incomplete owing to lack of information as to dams constructed under the old district system of expenditure and of which we have no record.

The larger number of the dams referred to in the schedule are small structures and create reservoirs of limited extent and depth, but some of them are large and expensive works costing some thousands of dollars, and flood large areas with the water stored in them. With three or four exceptions all the dams are earth structures and naturally of a very temporary character, and are constantly in need of repairs. They are, however, of such importance to the settlers living on adjoining lands that they must be maintained until something more permanent can be provided.

Recognising the importance of the question of water supply in Eastern Assiniboia, and with the object of endeavouring to undertake the construction of more permanent dams, an arrangement was made in 1897 with the Hon. the Minister of the Interior under which the general irrigation surveys of the south-western portion of the Territories were extended to Eastern Assiniboia with the object of locating the most suitable point for the construction of large and permanent dams, and determining the probable water supply available to fill the reservoirs created by these dams. These dams were carried on during the seasons of 1897 and 1898, and ten sites for extensive dams and reservoirs were located. It is hoped we may be able to undertake the construction of one or more of these permanent dams each year to take the place of the smaller and more temporary structures in the vicinity, and thus in a few years have a small number of large and permanent structures instead of the present large number of small earth dams.

These earth dams, as already explained, were constructed to meet a pressing want of water, and no particular attempt was made to design or construct them upon scientific principles. The larger number of them are located at points where the regular road allowances cross the small streams or ravines, the object being to make the embankment for the dam also serve for a roadway crossing. In many instances the surface sluice or spillway was built into the earth embankment, being bridged over for roadway purposes, and these structures not only weakened the embankment but are difficult to maintain in place or keep in repair. These dams are, as has been stated, a constant source of expense for repairs, but until we can carry out the system of replacing a number of the smaller structures by one large and permanent dam in each district the smaller dams must be maintained. There is, however, a question in connection with their maintenance which is a serious one and calls for some consideration and action by the Department. It is as follows:

Except in three or four cases, when designing and constructing this large number of earth dams no provision whatever was made for a sluice or waste pipe or passage through which the reservoir might be annually flushed out, and as a consequence the water in many of the reservoirs has become so foul and impure as to be utterly unfit for use in any way. In the winter the cattle are watered from holes cut out in the ice on the reservoirs and by spring the portions of the reservoirs in the vicinity of these watering places resemble a barnyard. This accumulation of manure and impurities sinks to the bottom of the reservoir when the ice

melts and is added to the droppings of the cattle and horses which are driven to the reservoir to water during the summer. These impurities, added to the natural impurities which result from the artificial storage of water in shallow reservoirs have, as already stated, rendered the water in many of the reservoirs totally unfit for use even for stock watering, but the prospect of getting the settlers in the vicinity of these reservoirs to realise this condition of affairs and to cease using the water seems very remote. However, one cannot blame them for this indifference to danger when it is remembered that in many localities the water contained in these reservoirs is all they have, at least for stock watering, and it is either a case of using this water or getting rid of their stock. Many of them also think that if the water is not actually used for domestic purposes there is little danger of disease through allowing the cattle to drink it. This is, of course, true except with reference to the milch cows, as it is recognised that one of the most fruitful sources for the dissemination of disease germs is through the medium of impure milk.

I am of opinion that the high winds which sweep across the prairies both in summer and winter perform a prominent part in the scavenging of settled districts and they, added to extreme winter frosts, probably do much towards counteracting the failure to flush out the reservoirs. However, without in any way desiring to create unnecessary alarm, I would direct attention to the great danger of a serious outbreak of typhoid or other forms of disease in Eastern Assiniboia directly traceable to the use of the impure water in these reservoirs, and would urge that, to meet the present emergency, and until we can get the larger dams with proper sluicing appliances constructed, the more important of the larger earth dams be provided with sluice or waste pipes during the season of 1899 and thoroughly flushed out in the fall. It is probable that we may be able to provide vitrified clay pipe, or some form of steel rivetted pipe, or solid iron pipe, which would be suitable for these sluice or waste pipes at a reasonable cost, but if this class of material proves too expensive we must provide some cheaper form of structure to serve the same end. Having put in the sluice ways it is intended to put the dam and reservoir in charge of the overseer of the local improvement district within which they are situated, and to instruct him to thoroughly sluice out the reservoir once a year. It will probably also be necessary in some instances to endeavour to prevent further pollution of the water in the reservoirs by fencing them in, and by making provision that cattle shall be watered at a point below the dam where water can be drawn off by a syphon or pump appliance. In this connection it would also be well that we should consider the question of planting trees along the edge of such reservoirs as may be fenced so as to ensure the collection of snow, and also counteract as far as possible the evaporating influence of the hot summer winds. If trees can be successfully grown they would, of course, add much to the appearance of the country in addition to assisting to accumulate and conserve a water supply.

To enable us to decide upon the dams which should be provided with sluice pipes, and also to obtain information regarding the possibility of fencing the reservoirs, it is proposed to arrange, if possible, to have one of the Dominion irrigation survey parties visit all the dams during the coming season so that we may obtain a report as to the condition of each dam and a recommendation as to those which it is desirable to maintain and improve.

SCHEDULE OF DAMS CONSTRUCTED BY THE TERRITORIAL GOVERNMENT.

NAME OF STREAM.	LOCAL NAME, IF ANY.	LOCATION OF DAM.					WHEN CONSTR'D
		$\frac{1}{4}$ Sec.	Sec.	Tp.	Rg.	M	
Assiniboia river (trib. of).....		N.E.	23	15	30	1	1898
" ".....		S.W.	25	15	30	1	1898
Boggy creek.....			21, 28	18	17	2	....
" ".....			12, 13	18	18	2	1898
Beaver creek.....		N.W.	1	16	30	1	....
Birch creek.....				30	14	2	....
Beaver Hill creek.....		N.E.	20	30	11	2	1898
Bain creek.....		N.W.	24	15	26	2	1898
Big Cut Arm creek (trib. of).....		N.W.	28	22	2	2	1898
Coulee.....			8	17	7	2	1887
" ".....			31	18	9	2	....
" ".....			7	19	10	2	....
" ".....			12, 13	29	15	2	....
" ".....			20, 29	16	15	2	....
" ".....			15, 16	19	11	2	....
" ".....			20, 21	19	26	2	1893
" ".....		S.E.	12	20	20	2	1888
" ".....			22	18	27	2	....
" ".....			31	17	26	2	....
" ".....			24, 25	20	14	2	....
" ".....		S.E.	9	16	17	2	1888
" ".....			33, 32	16	16	2	....
" ".....			21, 28	19	15	2	....
" ".....			35, 36	19	16	2	....
" ".....			11, 14	19	10	2	....
" ".....			15, 16	19	10	2	....
Cottonwood creek.....			23, 24	16	22	2	1892
Coulee.....		S.W.	4	29	14	2	....
" ".....	Neeley		4, 9	30	15	2	....
" ".....			32, 4	18, 19	25	2	1892
" ".....			6	20	14	2	1888
" ".....			17	18	8	2	1893
" ".....			21, 22	17	21	2	1892
" ".....			28, 29	20	14	2	....
" ".....			24, 25	20	12	2	1887
" ".....			33, 4	19, 20	15	2	....
" ".....			16, 17	20	14	2	....
" ".....	Robertson		26, 27	20	14	2	....
" ".....			4, 5	18	9	2	....
" ".....			33, 34	18	9	2	....
" ".....			34, 3	18, 19a	9	2	....
" ".....			4, 5	19a	9	2	....
" ".....			31, 36	18	9, 10	2	....
" ".....		S.E.	29	16	10	2	....
" ".....			33	15	6	2	....
" ".....			2	19	8	2	....
" ".....			15, 16	16	9	2	1896
" ".....			9, 10	13	30	1	1896
" ".....			11, 12	16	1	3	....
" ".....			26, 27	16	16	2	....
" ".....			24, 25	19	13	2	....
" ".....			5	19a	8	2	....
" ".....	Brigham		26, 35	13	31	1	....
" ".....			11	20	16	2	....
" ".....			3	19	14	2	....
" ".....			5	18	16	2	....
" ".....	Craigie		7	17	19	2	1891
" ".....			9, 16	17	19	2	....
Cottonwood coulee.....			7	17	21	2	....
Coulee (reservoir).....			15	17	26	2	1898
Coulee.....	McKay	S.E.	24	20	13	2	....
Coulee (reservoir).....			35	18	26	2	....
" ".....			29	23	31	1	....
" ".....		S.W.	21	23	30	1	1898

SCHEDULE OF DAMS CONSTRUCTED BY THE TERRITORIAL
GOVERNMENT.—*Continued.*

NAME OF STREAM.	LOCAL NAME, IF ANY.	LOCATION OF DAM.					WHEN CONST'D
		1/4 Sec.	Sec.	Tp.	Rg.	M	
Coulee	N.E.	12	33	13	2	.....
"	Hulbert		32, 5	17, 18	28	2	.....
"	Pioneer or Davin pond		31, 36	17	27, 28	2	.....
" (dry)		17, 18	17	24	2	1894
"		19, 20	17	13	2	1897
Duckhunting creek	N.W.	1	32	14	2	.....
" (trib. of)	N.W.	31	32	13	2	.....
Dry coulee		17, 18	17	24	2	1894
High river diversion into Little Bow	N.E.	1	19	29	4	1898
Indian Head creek	N.W.	13	19	13	2	.....
"	N.E.	14				
"	N.E.	4	19a	12	2	.....
"		31	18	12	2	.....
"	N.E.	35	18	13	2	.....
"	N.W.	36				
"	Indian Head	S.E.	24	18	13	2	.....
Insinger creek		11	26	6	2	1898
Little Cut Arm		3	19	1	2	.....
"		16, 17	19	1	2	.....
Little Whitesand river	Ebenezer		33	27	4	2	1898
Little Long Lake		29, 30	17	14	2	1893
Many Bone creek (branch of)		30	16	16	2	.....
"	{ N.E.	11				
"	{ S.E.	14	16	17	2	.....
Moose Mountain creek (branch of)	Taylor		11, 12	15	10	2	.....
Moose Jaw creek (trib. of)		11	15	26	2	1898
Nose creek	N.E.	23	24	1	5	1898
Pipestone creek (branch of)	Howey		26, 27	16	9	2	.....
Pheasant creek		21, 22	20	10	2	.....
" (branch of)		2, 3	21	9	2	.....
"	{ N.E.	34				
"	{ N.W.	35	19	11	2	.....
"	{ N.W.	27				
"	McConnell	{ N.E.	26	19	11	2	.....
"	{ S.E.	21				
"	{ S.W.	22	19	11	2	.....
"		30, 31	19	11	2	.....
Pipestone creek (trib. of)		19, 30	13	1	2	1898
Qu'Appelle river	Katepwe	N.W.	27	19	12	2	1898
Qu'Appelle river (trib. of)	Miller		9, 10	16	10	2	.....
"		33, 34	15	9	2	.....
"		19, 30	19	12	2	.....
"		28, 29	19	14	2	.....
"		11, 12	19	15	2	.....
"		2	20	12	2	.....
"	Given		33	20	14	2	.....
"	Shores		2	21	12	2	.....
"		23, 26	21	12	2	.....
"		2	20	14	2	.....
"		22, 23	19	16	2	1888
"		14, 15	19	14	2	.....
"	N.W.	19	19	14	2	.....
"		36, 6	18, 19a	10, 9	2	.....
"		5, 6	19	9	2	.....
"	{ N.E.	26				
"	{ N.W.	25	19	13	2	.....
"	{ N.W.	35	19	13	2	.....
"	{ S.W.	2	20	13	2	.....
"	{ N.W.	20				
"	{ S.W.	29	18	11	2	.....

SCHEDULE OF DAMS CONSTRUCTED BY THE TERRITORIAL
GOVERNMENT,—*Continued.*

NAME OF STREAM.	LOCAL NAME, IF ANY.	LOCATION OF DAM.					WHEN CONSTR'D
		½	Sec.	Sec.	Tp.	Rg.	M
Qu'Appelle river (trib. of)		{ N.W.	28 }		18	11	2
"		{ S.E.	32 }				
"	Smith		12		19	11	2
"			2		19	11	2
"			9, 16		19	9	2
"			8, 17		19	9	2
"			5, 6		19	9	2
"		N.W.	28		18	14	2
"	Squirrel coulee	S.E.	28		18	14	2
"	"		{ 34	18 }			
"	"		{ 2	19 }		14	2
"	"		2		19	14	2
"	"		11, 14		18	13	2
"	"		28, 29		16	15	2
"	"		10, 11		18	14	2
"	McIntyre		31, 32		21	13	2
"			32, 33		20	14	2
"		N.W.	19		19	12	2
"	Rigby	N.E.	35		18	12	2
"		S.E.	24		19	13	2
"	Cascana	S.W.	24		20	13	2
"			31, 36		17	12, 13	2
Qu'Appelle river	Ft. Qu Appelle	N.W.	8		21	13	2
Qu'Appelle river (trib. of)			7, 12		19	14, 15	2
"	Wapella		9		15	33	1
"			36, 6	18, 19a		11, 12	2
"	Banks		28, 29		18	11	2
"			16, 17		20	7	2
"		S.W.	3		17	2	2
"		S.W.	19		19	12	2
Red Fox creek		{ N.E.	33 }		18	12	2
"		{ N.W.	34 }				
"			{ 34	18 }			
"			{ 3	19a }		12	2
"			22, 27		18	12	2
"	(branch of)	{ N.E.	10 }				
"		{ S.E.	15 }		18	12	2
"		{ N.W.	2 }				
"		{ N.E.	3 }		19	12	2
"		N.W.	26		18	12	2
Spring creek			34, 35		44	27	2
"			15, 16		20	12	2
Squirrel Hills creek (tributary Qu Appelle river).			11, 14		18	13	2
Summerberry creek (branch of)	Summerberry		7, 18		17	8	2
"	Fleming		32, 5		16, 17	8	2
"	Hobson		36, 1		16, 17	8	2
Thunder creek (branch of)	Porter		23, 26		17	28	2
"			7		17	27	2
"			18, 13		18	28, 29	2
Wascana creek			30, 25		15	16, 17	2
"	Barracks, Regina		22, 27		17	20	2
"	Regina reservoir	N.W.	18		17	19	2
"	Bennett's		34, 3		17, 18	22	2
"			34, 35		17	22	2
Wolf creek (branch of)	Nix		28, 29		16	10	2
"	Findlay		14, 15		16	10	2
"	Wolseley	{ N.E.	13 }				
"		{ S.E.	14 }		17	10	2
"			26, 27		17	10	2
"			24, 25		17	10	2
"	Adair		9, 10		16	9	2

SCHEDULE OF DAMS CONSTRUCTED BY THE TERRITORIAL
GOVERNMENT.—*Continued.*

NAME OF STREAM.	LOCAL NAME, IF ANY.	LOCATION OF DAM.					WHEN CONST'D
		1 st Sec.	Sec.	Tp.	Rg.	M	
Wolf creek (branch of) . . . . .	.....	.....	28	15	9	2	....
Wolf creek	Wolseley, constructed by C.P.R. Co. . . . .	.....	11	17	10	2	....
In coulee	Hextal . . . . .	.....	35, 36	17	8	2	....
"	Crossier . . . . .	.....	25, 35 36	17	9	2	....
"	Wolseley creamery	N.E.	11	17	10	2	....

FERRY ACCOMMODATION.

The public ferries in the Territories upon which a considerable sum was expended during the past season are provided and maintained under the provisions of The Ferries Ordinance.

These ferries are of two classes. First, those that are built and operated by the department as public works and, second, those constructed by private individuals and operated under licenses issued which authorise a certain schedule of tolls.

When the system of putting ferries on certain of the streams in the Territories was first adopted it was decided to put the ferries up to competition, and the man offering the highest bonus received the license to provide and operate the ferry for a period of three years. This system naturally resulted in the collection of high tolls so as to make the venture a paying one for the persons providing the ferries, and entailed a serious tax upon the residents in certain districts where ferries had to be largely used to reach market centres. Shortly after the organisation of the Public Works Branch it was decided to change this system, as it seemed unjust that we should attempt to obtain any revenue from the operation of ferries by taxing settlers who had the misfortune to live on either side of streams which we were unable, with present Territorial revenues, to bridge. The policy adopted was to provide and operate ferries where needed, paying a small monthly salary to the men operating them in addition to a very low schedule of tolls which they were authorised to collect.

This system is in force with regard to all the ferries now in operation, except in the case of those on the Assiniboine river, which are only run for a short time in spring when the water is high (these being run by the persons using them without the payment of any tolls), and the ferries which have been provided by private individuals on the road from Edmonton to Peace River. These latter are operated under a yearly license and the schedule of tolls is high, as they are only used by freighters or persons travelling into the north country, and are not in any sense public works for the purpose of giving settlers access to market.

The accompanying schedule gives particulars as to all the ferries now operated by the department. It will be noted from this schedule that all the ferries, with one exception, are the usual cable ferries operated by the current of the stream. The steam ferry operated on the North

Saskatchewan river at Battleford was provided by private parties some years ago, a bonus towards its construction having been paid by the Government. Last year this ferry was purchased at a valuation and is now operated at a low schedule of tolls as a public work. The tolls collected do not, of course, pay the running expenses of the ferry but it is impossible to operate a cable ferry at that point, and a bridge is of course beyond our means to provide. The steam ferry is operated so as to give access from a large district north of the river to Battleford as their market centre, and also as part of the colonization road which we have opened up from Saskatoon to that point.

SCHEDULE OF FERRIES OPERATED BY THE DEPARTMENT.

LOCATION OF FERRY.	NAME OF STREAM.	STYLE OF FERRY.	FERRY OWNED BY
Fort Saskatchewan	North Saskatchewan river	Cable	Govt.
Victoria	"	"	"
Battleford	"	Steam	"
Carlton crossing	"	Cable	"
Fort Pitt	"	"	"
Wingard crossing	"	"	"
Lily plains	"	"	"
Crossing Peace River road	Pembina river	"	Private
"	Athabasca river	"	"
"	Lesser Slave lake	"	"
Isbister's crossing	South Saskatchewan	"	Govt.
McKenzie's crossing	"	"	"
Adam's crossing	"	"	Private
Batoche crossing	"	"	Govt.
Fish creek crossing	"	"	"
Saskatoon	"	"	"
Medicine Hat	"	"	"
Fort Pelly	Assiniboine river	"	"
Kamsack crossing	"	"	"
Blackfoot crossing	Bow river	"	"
Colles	St. Mary river	"	"
Tindastoll	Red Deer river	"	"

BORING AND TESTING FOR WATER AND PROVIDING PUBLIC WELLS.

The scarcity of water for domestic and stock watering purposes in certain portions of the Territories, and the important bearing which this question has upon the success and welfare of settlers now residing in those districts, as well as upon the extension of present settlement, has already been referred to under the heading of Dams and Reservoirs. The efforts which have been and are being made to overcome this material drawback by the construction of dams has also been referred to at some length. It is now proposed to consider the system which has been adopted by the department in endeavouring to augment the water supply by providing public wells which will not be subject to the same contaminating influences as the reservoirs, and will, therefore, supply good water for domestic use in localities where the water supply for that purpose is either impure or insufficient.

The problem of providing a water supply from wells in a large por-

tion of the eastern plains region of the Territories is a difficult one. To the south of us, in western Dakota, and further south in Nebraska and Kansas, similar conditions of scarcity of water supply are met with, and as the topographical conditions of these States closely resemble those in the Territories their experience in endeavouring to solve the problem, when added to that resulting from the work we have so far accomplished, forms a good basis for considering the question. In all the eastern portions of the great plains region of North America the rock formation lies at a great depth below the surface, and in most parts the gravels or other water bearing strata also lie at depths which prohibit the custom prevailing in the eastern and western parts of the continent of obtaining water by digging wells. In these districts the larger streams, and also many of the smaller drainage channels, flow in deep valleys many hundred feet below the general elevation of the "bench" or prairie land, and on these high plateaus the system of drilling for water has had to be adopted. In the portions of the United States referred to large sums have been expended in endeavouring to obtain water by this means, and their operations have extended over so many years that they are now able to say with some degree of certainty what depths will have to be reached before a permanent water supply can be obtained. In the Territories our operations have not been sufficiently extended or scheduled to enable us to fix the depths of the different water bearing strata, but considering the similarity of conditions, and bearing in mind the greater elevation of our prairie lands, we may, I think, safely say that to obtain artesian wells, such as they have in many portions of western Dakota, will necessitate boring or drilling to great depths, and in the large majority of cases wells of this character will be quite beyond the means of the average farmer.

When the scarcity of water in Eastern Assinibolia became apparent the Territorial Government undertook to try and assist the settlers by providing test augers with which tests could be made to depths of from fifty to one hundred feet, and these augers were used in making tests on farms in different districts with the object of locating, if possible, a water supply which might then be made available by digging wells.

As will be noted from the following schedule of well-boring machinery, twenty-three of these test augers or drills were provided and they have been operated for some years in different portions of the Territories.

SCHEDULE OF WELL BORING MACHINES OPERATED BY THE DEPARTMENT.

NO. OF MACHINE.	DESCRIPTION.	NO. OF MACHINE.	DESCRIPTION.
1.....	Steam	14.....	Hand auger.
2.....	Deep well (boring, Austin).	15.....	Power auger.
3.....	"	16.....	Hand auger.
4.....	Hand auger.	17.....	"
5.....	"	18.....	"
6.....	"	19.....	"
7.....	"	20.....	"
8.....	"	21.....	"
9.....	"	22.....	"
10.....	26 inch power auger.	23.....	Horse power.
11.....	Hand auger.	24.....	Deep well (boring)
12.....	"	25.....	"
13.....	"	26.....	Hand auger.
		27.....	"

The test augers above mentioned have on the whole done good work and many valuable wells have been located by their use. Up to date many hundreds of tests have been made but, unfortunately, no definite record of the results has been kept or the results assembled in graphic form to illustrate the possibility of obtaining water in the districts where the work has been done. We are now, however, endeavouring to record the results from the reports of the foremen operating the test augers, and to indicate these results on sheet maps so as to illustrate the existing conditions in districts where they have been used. This information will prove of great value in future dealings with this important subject, and by adding to it from time to time the results of deep well boring operations we will ultimately obtain some reliable data for use in dealing with this difficult problem.

Shortly after the organisation of the Public Works Branch it became evident that something would have to be done towards providing deep public wells in districts where the use of the test augers had demonstrated that water could not be obtained at a reasonable depth. It was, therefore, decided to obtain and operate deep well boring machines, and in pursuance of this policy three machines of this character were operated during the past season. One of these machines is a steam well drilling machine purchased some years ago and operated for one or two seasons in the north-eastern portion of Assiniboia. The other two machines are Austin deep well boring machines, manufactured in Chicago, and are operated by horse power. The two latter machines were purchased in 1897 by the Department of the Interior and turned over, together with a car load of well casing, to the Territorial Government.

During the past season tests for water were made with these deep well boring machines, and twenty-two wells with a supply of water were obtained, the location and depth of these wells being given in the accompanying schedule. The experience obtained from last season's operations leads to the conclusion that the steam machine which we have is of very little use in putting down deep wells and it is intended to discontinue its working. The trouble with this machine is that it is fitted to put down wells of only four inches diameter, and wells of this size are altogether too small to be of value in producing a large supply of water. There is the further difficulty that the steam engine and boiler are too heavy to be readily transported from point to point, and in the open portions of the country, where most of our deep well boring operations are carried on, there is great difficulty in obtaining fuel to operate the engine. The water for operating the engine is also a serious consideration, as will be recognised when it is mentioned that these deep well boring machines are being operated in districts where the present water supply is very meagre.

The Austin machines, which are operated by horse power, and are easily and cheaply moved from point to point, have proved very satisfactory, and any additional machines obtained should be of this make or of a similar character. With the Austin machines we put down wells of six inches diameter and can reach if necessary a depth of 500 feet.

During the past season we confined our tests to depths of 200 feet. We did this because there is very little prospect of obtaining artesian or flowing wells without going to greater depths than we can reach with our machines or within reasonable cost, and there is great difficulty in obtaining pumps which can be operated by manual labour to raise water over 200 feet.

To make wells in which we can obtain water available for public use we, of course, have to provide them with pumps, and our system has

SCHEDULE OF PUBLIC WELLS.—*Continued.*

NO.	DISTRICT.	LOCATION.					DEPTH OF WELL	STYLE OF PUMP.	WELL PUT DOWN IN
		$\frac{1}{4}$ Sec.	Sec.	Tp.	Rg.	M			
							FEET		
12	Mitchell	SE.	23	40	4	3	87	Myers	1898
13	"	S.E.	33	42	5	3	98	Aermotor force, 101	1898
		S.W.	34						
14	"	N.W.	5	44	4	3	117	Hayes double	1898
		N.E.	6	43	2	3	94	cylinder	1898
15	"	S.E.	4						
		N.E.	33					Myers	1898
16	North Qu'Appelle			27	15	2			1898
17	Batoche	N.E.	10	44	28	2	63	Myers	1898
		S.E.	15						
18	North Qu'Appelle		20	20	13	2	124	Aermotor force, 101	1898
			29						
19	Whitewood	S.W.	28	14	2	2	83 $\frac{3}{8}$	Myers	1898
		S.E.	29						
20	Batoche		12, 13	44	28	2	170	"	1898
21	"	S.E.	3	45a	27	2	108	"	1898
		S.W.	2						
22	Whitewood	S.E.	14	12	1	2	57	Traherne lift	1898
		S.W.	13						
23	Batoche	N.W.	33	44	26	2	88	Myers	1898
		S.W.	4	45a					
24	"	bet.	19, 30	44	26	2	95	"	1898
25	Mitchell		35	42	3	3	75	Hayes dbl. cyl.	1898

In dealing so far with the question of public wells we have first endeavoured to find out which districts were in most pressing need of water by obtaining information from the local members, settlers, local inspectors and others, and have then illustrated this information in the order of importance by colouring the townships referred to on a map. We then lay out a definite route for the well-boring machines based on the information given on the map, and adhere as closely as possible to this route in performing the season's work. We now have so many applications on file for deep public wells that it is quite evident we will have to materially increase the number of our machines if we are to hope to meet the necessities set forth by these applications in the near future.

PROVIDING FIREGUARDS.

The prairie and forest fires which annually devastate some portions of the Territories do an amount of damage which is not by any means measured by the direct loss suffered by the settlers in these districts. These fires in the timbered regions destroy forested areas which in future years would be of the greatest value to adjacent settlements, and on the prairie the annually recurring fires destroy not only the grass needed for present pasturage, but in some districts have so burnt out the roots as to leave large areas upon which the grass has entirely ceased to grow.

The system of endeavouring to control fires by constructing fire guards has been in force in the Territories for many years, and a comparatively large portion of the Territorial revenue has been devoted to this work. Like some of the other work performed under the old system of district grants the best results have, however, not been obtained owing

to want of a defined system in laying out these guards so as to make them portions of a well considered and continuous system.

We are now endeavouring, in districts where fire guards have been constructed, to illustrate the location of these guards by laying them down on a map so as to show in a graphic manner their situation and the location of any links needed to make the system complete. In providing new guards the object will be to try and make them portions of a well considered and proper system of guards in any particular district.

There is a feature in connection with providing fire guards that is not always considered by those applying to have them constructed. They overlook the fact that once a fire guard is provided, unless it is properly maintained it is not only useless, but owing to the rapid growth of weeds and bushes on these ploughed guards they are an added source of danger from fire. It is therefore particularly desirable that no guard should be provided that is not a part of a well considered scheme of guards, as the annual expenditure for keeping them clear of weeds or brush will become a serious tax on our annual expenditure if such unnecessary guards are provided.

In discussing this subject it should also be noted that one of the most fruitful causes of prairie fires are the sparks from the locomotives operated on the several railways which traverse the Territories. The railway companies naturally claim that their engines do not start fires, or at least that they start a very small proportion of those which annually occur. This claim cannot, I think, be sustained, for there is abundant evidence that a large proportion of the most serious fires are traceable to this source. The companies, it is true, make some effort to prevent fires by ploughing fire guards along their lines, but in my opinion the value of these guards is very questionable owing to the fact that they are too near the line and are not wide enough. When an engine is hauling a heavy train, and in consequence being worked hard on up grades, if one of the high winds to which the plains region is subject happens to be blowing, it is almost certain that sparks from the engine will be carried outside the fire guard along the line and a more or less serious prairie fire be started. If the guards at present provided by the railway companies were put back say twice the present distance from the line, and were increased to double the present width, they would prove much more effective and many fires which now do serious damage would be prevented.

In 1897 a proposal was made to the railway companies under which the question of providing more serviceable guards along their lines was to be dealt with jointly by the companies and the department. Unfortunately they did not see their way to accept the proposals made, but I am strongly of opinion that until something is done to provide more efficient guards along the railway lines we cannot expect immunity from many of the serious fires which annually occur.

During the past two years some attention has been given to obtaining a fire guard burning machine with which proper guards might be provided, instead of the ploughed guards which we now construct. Some small amounts have been granted as bonuses towards the construction of machines of this character in the hope of securing one which would do satisfactory work. So far, however, no machine has been constructed that will work satisfactorily under all the varying conditions to be met with in different portions of the Territories, and we are, therefore, providing the old style of ploughed guard until such time as a thoroughly satisfactory burning machine is constructed.

During the past year the sum of \$3,021.31 was expended in providing new and maintaining old fire guards, and it is probable that this sum will have to be materially increased in the coming and future years to permit of this portion of our work being dealt with as its importance warrants.

CLEARING AND GRADING ROADS.

The question of good roads is one in which every citizen of the Territories has a direct interest. This fact is not sufficiently realised by the residents of the towns and villages, their idea being that the farming community are principally interested in this matter. That the farmer who has a large quantity of grain or other produce to market is directly concerned in having good roads over which to do his teaming needs no proof, but if the merchants, millers and elevator owners at the market centres would realise that the introduction of good roads means a direct financial saving to the farmer, and a consequent larger amount to spend in the comforts and luxuries of life, their interest in the subject would be much more pronounced.

In the older provinces of the Dominion, and in the United States, the subject of good roads has now become of first importance and is receiving that attention and consideration which its importance merits, but which has been long delayed.

In the Territories our pioneers have fortunately not been confronted with many of the obstacles to good roads which had to be overcome by the pioneers in the older provinces, and nature has made up for some of the shortcomings in the way of climate, lack of water and fuel by providing long stretches of country where the natural surface of the prairie land affords a fairly good road for travel in any direction. In the northern and timbered portions of the Territories more difficulty is of course experienced in obtaining good natural roads, but even there the troubles met with are small compared with those which had to be overcome in many of the older parts of the Dominion where heavy timber had to be first cleared from rights of way for roads before any attempt could be made to improve them.

The pioneer road makers of the Territories were the traders who, in days gone by, annually left Fort Garry with long trains of Red River carts loaded with goods to trade on the plains for buffalo robes, or for far distant posts of the Hudson's Bay Company in the north and west. The main trails which intersect the Territories in many directions still mark the line of travel followed by these pioneers of civilisation, and the intelligence displayed in locating these trails has been a matter of favourable comment by those who have since used them in travelling through the Territories.

In many instances these old trails were found to be the best locations for main highways between different portions of the Territories and they have therefore been surveyed and set aside for that purpose. With the extension, however, of railway lines to the different portions of the Territories the necessity of transporting goods over these old highways has passed away, and to-day the requirements in the way of roads comprise those which radiate from the different market centres on these railway lines to the settlements in the vicinity.

That these market roads, as they may be termed, should be good roads needs no proof, but the actual money value to the farming community of having them so is but poorly appreciated. In Ontario it is

stated by the Provincial Instructor in Road Making that the actual annual loss to the farming community owing to the bad roads is the enormous sum of \$19,000,000. This statement will no doubt be accepted with incredulity by the general public, but those who care to consider his figures, as given in a valuable report on the subject of roads and road making addressed by him in 1897 to the Hon. Minister of Agriculture, will find that his conclusions are well founded.

In many of the eastern States of the United States estimates have been published of the annual loss to the farmer owing to want of good roads which are more surprising than that quoted above and, as already stated, the movement for good roads in these States is spreading and receiving intelligent consideration at the hands of both the governments and the people themselves.

In the Territories the necessity for good roads is of course more apparent in those portions where large quantities of grain have to be hauled to market, and it is in these districts that the most of our work towards improving the roads has to be done. The amount of teaming that has to be done to deliver what, in the wheat growing area, is considered a moderate crop of wheat, at the nearest elevator, is not generally understood. If we take the average haul at five miles, which is under present conditions very low, and the average load at 60 bushels, which is probably high, a farmer having 1,000 bushels of wheat has to make 16.5 trips to deliver his grain and in doing so must travel about 165 miles. When it is remembered that many farmers have yields of from five to ten thousand bushels of wheat the serious undertaking involved in delivering this quantity of grain at the nearest market point will be appreciated.

It will also be understood how the farming community in any district would benefit from such improvement of the roads as would permit of an additional ten or twenty bushels of wheat being hauled at each trip over and above what they can now move.

During the past few years a very considerable sum has been spent in the endeavour to improve the condition of the roads in certain parts of the Territories, but in many instances, owing to want of intelligence and information as to proper methods of road making on the part of the foremen in charge of the work, the best results have not been obtained. There has been the further difficulty that the work of road improvement has not in many districts been undertaken as a part of a well considered scheme of providing main thoroughfares for public travel, and the work has therefore been of a patchy and incomplete character.

We have, since the organisation of the department, endeavoured to overcome the first trouble by providing a manual of instructions regarding the correct methods of roadmaking, which we put in the hands of all foremen, and we are now obtaining information as to the main highways in the different districts with the object of concentrating as far as possible the government expenditure for road improvements upon these main roads, leaving the improvement of side roads to the local improvement districts. By following out this policy it is hoped in a few years to get these main highways in a good condition for heavy traffic, and at the same time provide something in the way of an object lesson for the overseers who may undertake the improvement of tributary roads as local work.

The improvement of roads so far has, with a few exceptions, consisted merely of grading them so as to give a more or less even road bed

with sufficient crowning to shed the water and to provide culverts where necessary to run off this drainage.

In the eastern and northern portions of the Territories, where the main lines of travel are intersected by natural features like the valleys of the Saskatchewan and Qu'Appelle rivers, and other smaller streams, a considerable portion of the expenditure on road improvement has been made in connection with the grading of hills into and out of these valleys. In carrying out the policy of providing main highways above referred to our efforts in the future should be concentrated as much as possible upon the improvement of these hills which, even under the most favourable circumstances, constitute a great obstacle to the movement of the crops of certain districts to the nearest railway lines. In many instances the work upon these hills has not been completed with a sufficient view to drainage, and as a consequence many of them scour badly during the time of melting snows or heavy rains and need annual repairs. Much of this difficulty can be overcome by providing proper catch and off-take drains, and this work should be proceeded with before any further attempt is made to improve the actual road beds.

The fact that good roads are primarily dependent upon good drainage is not recognised by the average road foreman, but is nevertheless true, and as it is quite impossible under present conditions, in the larger part of the Territories, to provide anything in the way of gravel or broken stone as a top dressing for our graded roads, it is the more necessary that we should try and provide good drainage facilities so as to keep our earth roads as dry as possible.

Culverts play an important part in the question of the drainage of roads. As has already been noted in previous pages of this report, the materials for building stone culverts is not readily obtainable in most portions of the Territories, and in the past the practice has been to provide wooden structures. The large annual charge required to keep these wooden culverts in repair has already been referred to, and it is desirable that in future we should if possible provide proper vitrified culvert pipes so as to make our roads more permanent. Pipe of this kind, for culverts two feet in diameter, can be laid down at most points in the eastern portions of the Territories for about \$3 a length. These lengths of pipe are two and one half feet long, and as our ordinary culvert is about twenty-five feet in length, ten lengths of culvert pipe would be needed. These, at the figures quoted, would cost \$30, and it would probably cost an additional \$10 to put the pipe in place, making a total cost of \$40 for the completed culvert. A wooden culvert of this size could be put in for about \$20, but would have to be renewed every four or five years, and as the vitrified pipe culverts are practically indestructible there is no question that in the end it will pay to put them in even at a present cost of double that of the wooden structures.

Since the organisation of the department the larger portion of our road grading has been done with road grading machines. These machines are particularly suitable for operation in the Territories owing to the absence of stones, and if handled by an intelligent foreman they do excellent work. In some districts where the soil is light roads can be graded with these machines at a very small cost, and in all the eastern portions of the Territories we can grade roads with a twenty foot road bed, crowned eighteen inches and left in condition for travel, at an average cost of about \$30 a mile. These roads of course require to be surfaced up every year if they are to be kept free of ruts, and are at best but earth embankments, and as such are liable to cut up very badly in wet weather.

LIST OF LOCAL IMPROVEMENT DISTRICTS IN THE NORTH-WEST TERRITORIES.

NO. OF DIST.	AREA.				DATE ORGANIS'D	NAME OF OVERSEER.
2	Tp. 53	Rg. 22	W. 4	M.	1893.	Archibald Boag.
3	26	3, 4	2	except L.S. of Sec. 2	1894.	E. A. Healey.
4	23	4	2	.....	
	22	4	2	except Secs. 1, 2, 3,		
	4, 5, 6, 10, 11 and 12.			.....	1894.	H. H. Watts.
5	Tp. 24	Rg. 1	W. 2	M.	1894.	Ernest Carss.
6	22	1	2	.....	1894.	R. Bird.
7	24	2	2	.....	1894.	D. McKillop.
8	23	1	2	.....	1894.	C. W. C. Saunders.
9	23	2	2	.....	1894.	J. W. McGregor.
10	25	1	2	.....	1894.	Thomas Jowsey.
11	23	3	2	.....	1894.	Robert Maddaford.
12	32	1	5	.....	1894.	S. B. Harrison.
13	33	1	5	.....	1894.	Edward Lewis.
14	32	2	5	.....	1894.	E. Bame.
15	33	2	5	.....	1894.	Peter Jaffery.
16	22	2	2	.....	1894.	Alexander Methven.
17	55	21	4	.....	1894.	John Fluker.
18	11	32	1	.....	1894.	George Faulkner.
19	20	11	2	.....	1894.	J. Morrison.
20	54	21	4	.....	1894.	David Simpson.
21	49	25	4	.....	1895.	John McEachern.
22	50	25	4	.....	1895.	Andrew Pogue.
23	54	23	4	.....	1895.	James Cram.
24	51	25	4	.....	1895.	C. Black.
25	51	1	5	.....	1895.	Frank Sieh.
26	52	1	5	.....	
	Fr. 52	28	4	.....	1895.	J. B. Butchart.
27	20	12	2	.....	1895	Charles Bonnycastle.
28	52	27	4	.....	
	Fr. 52	26	4	.....	1895.	S. J. Eccles.
29	53	27	4	.....	1895.	Daniel Brox.
30	54	24	4	.....	1895.	John Meneely.
31	54	22	4	.....	1895.	H. Irwin.
32	52	23	4	.....	1895.	Samuel Galley.
34	18	25	2	.....	1895.	Daniel Gilmour.
35	50	24	4	.....	1895.	S. H. Johnston.
36	17	27	2	.....	1895.	John W. Glasford.
37	49	24	4	.....	1895.	Daniel Schellin.
38	55	27	4	.....	1895.	William Cyre.
39	53	23	4	and portion S. of R.		
	of 53	24	4	.....	1895.	J. G. Ottewell.
40	55	19	4	.....	1895.	Daniel McLean.
41	55	20	4	.....	1895.	W. F. Leslie.
42	55	24	4	.....	1895.	C. Carruthers.
43	56	19	4	.....	1896.	Ole Sundsdahl.
44	53	28	4	.....	
	53	1	5	.....	1896	Israel Umbach.
45	53	25	4	.....	1896	Samuel Soucy.
46	53	26	4	.....	1896.	Gideon Lacerte.
47	52	24	4	.....	1896.	L. Garneau.
48	51	23	4	.....	1896	C. J. McDonald.
49	19	18	2	.....	1897.	William White.
50	19, 20	17	2	.....	1897.	Richard Hoyer.
51	56	15	4	.....	1896.	Patrick Boland.
52	54	25	4	.....	1896.	Delmar Bard.
53	56	20	4	.....	1896.	C. E. Bevington.
54	32	3	5	.....	1896.	Gavin Hamilton.
55	54	26	4	.....	1896.	Denis Hebert.

LIST OF LOCAL IMPROVEMENT DISTRICTS IN THE NORTH-WEST TERRITORIES.—*Continued.*

NO. OF DIST.	AREA.	DATE ORGANIS'D	NAME OF OVERSEER.
56	Secs. 25, 26, 27, 28, 29, 30, 31 and 32, in Tp. 2, Rg. 25; Secs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12, parts N. St. Mary's river and E. Lee's creek of Secs. 13, 14, 23 and Sec. 24 in Tp. 3, Rg. 25; Secs. 25, 26, 35 and 36 in Tp. 2, Rg. 26; and Secs. 1, 12, in Tp. 3, Rg. 26, all W. 4 M. (except Village of Cardston)	1896..	J. A. Hammer.
57	Tp. 19 R.25, 26 W. 2 M.. S. Buffalo lake.	1897..	Charles E. Rigden.
58	2 27, 28 4 E. Belly river.	1897..	S. Webster.
59	46 22, 23 4 W. Battle river and S. of Pipestone creek.	1897..	Arthur Whittaker.
60	Tp. 18 Rg. 7 W. 2 M.	1897..	G. D. Fitzgerald.
61	15 7 2	1897..	Philip Leech.
62	16 7 2	1897..	T. W. Wright.
63	16 22 3	1897..	T. Clark.
64	20 10 2	1897..	A. B. Ferrier.
65	15 17 2	1897..	John Eutenier.
66	35 27 4	1897..	James N. McLean.
67	35 1 5	1897..	John Robinson.
68	53 24 4 N. Saskatchewan R.	1897..	Francis C. Clare.
69	56 24 4	1897..	C. Ed. Boutwell.
70	17 18 2	1897..	Andrew Martin.
71	35 28 4	1897..	Robert L. Earl.
72	21 9 2	1897..	Thadeus S. Cornell.
73	55 23 4	1897..	John Hall.
74	21 10 2	1897..	H. M. Aldous.
75	17 7 2 except Village of Grenfell	1897..	Angus McPherson.
76	Tp. 20 Rg. 9 W. 2 M.	1897..	Henry J. Kenyon.
77	45 22, 23 4 and 46 22 4 E. and S. of Battle river	1897..	Benjamin Shantz.
78	Tp. 21 Rg. 8 W. 2 M.	1897..	John Matthews.
79	21 31 1	1897..	Fr. Hildebrandt.
80	20 8 2	1897..	Fredreich Tressel.
81	N. $\frac{1}{2}$ 36 1 5 W. $\frac{1}{2}$ 36 28 4 and Secs. 1, 2, 11, 12, 13, 14, 23, 24, 25, 26, 35 and 36 in Tp. 36 Rg. 2 W. 5 M., N. and W. Red Deer river.	1897..	John Bjornson.
82	Tp. 24 Rg. 32 W. 1 M.	1897..	J. Einarrson.
83	35 26 4	1897..	William S. Bilton.
84	25 2 2	1897..	John Jowsey.
85	16 17 2	1897..	Daniel Pretty.
86	20 32 1	1897..	Archibald Park.
87	17 17 2	1897..	J. A. McGirr.
88	22 31 1	1897..	Ludwig Werle.
89	26 3 2	1899..	Charles Beck.
90	20 20 2	1897..	Isaac W. Sutton.
91	18 20 2	1897..	R. G. Fitzpatrick.
92	18 22 2	1897..	C. E. Fish.
93	20 7 2	1897..	Christof Schultz.
94	21 32 1	1897..	George Neumeier.
95	19 22 2	1897..	Alexander Mutch.
96	21 33 1	1897..	William Rowland.
97	46 23 2	1897..	George Taylor, jr.
98	16 3 2	1897..	John King.
99	20 1 2 and part N. Little Cut Arm creek of Tp. 19-1-2.	1897..	Charles H. Leftwich.

LIST OF LOCAL IMPROVEMENT DISTRICTS IN THE NORTH-WEST TERRITORIES.—*Continued.*

NO. OF DIST.	AREA.	DATE ORGANIS'D	NAME OF OVERSEER.
100	Tp. 17 Rg. 2 W. 2 M.	1897	L. Robertson.
101	16 6 2	1897	Jacob Crull.
102	15 6 2	1897	Albert Dash.
103	18 2 2	1897	Mikael Hoglund.
104	19, 19a 2 2	1897	Alex. Stenberg.
105	19 1 2 S. Little Cut Arm creek, and Tp. 19a, Rg. 1, W. 2	1897	Stephen Barath.
106	Tp. 45 Rg. 21 W. 2 M., and Secs. 21, 22, 25, 26, 27, 28, 30, 31, 33, 34, 35 and 36, in Tp. 44-21-2	1897	Robert Hartley.
107	Tp. 18 Rg. 19 W. 2 M.	1897	Archibald McCallum.
108	19 19 2	1897	Andrew Ormiston.
109	19 20 2	1897	John E. Petrie.
110	21 19 2	1897	Robert Mollard.
112	15 3 2	1897	Stephen A. Hall.
113	16 2 2	1897	P. M. Gillis.
114	14 2 2	1897	Theodore James.
115	16 4 2	1897	William Mayhew.
116	15 5 2	1897	Frank Elkins.
117	44 18 2	1897	S. B. Maxwell.
118	19 21 2 except Village of Lumsden	1897	S. S. Dickson.
119	Tp. 14 Rg. 3 W. 2 M.	1897	John Blackwood.
120	16 1 2	1897	Thomas Jones.
121	44 19 2	1897	T. N. Irvine.
122	18 18 2	1897	John Agopsowicz.
123	17 1 2	1897	W. R. Carson.
124	18 1 2	1897	Matthew Daniel.
125	43, 44 2 3 except Village of Duck Lake	1897	Alcide Marcotte.
126	Tp. 17 Rg. 21 W. 2 M.	1897	Sanders Howe.
127	25 3 2	1897	Charles Peaker.
128	13 1 2	1897	John Kidd.
129	15 2 2	1897	James Stewart.
130	12 1 2	1897	J. B. Powell.
131	16 18 2	1897	William Clancy.
132	23 32 1	1897	J. Heinrichson.
133	23 30 1	1897	Philip Popp.
134	23 31 1	1897	Ludwig Gohring.
135	22 30 1	1897	R. C. Patterson.
136	21 1 2	1897	Frederick J. Baskin.
137	14 1 2	1897	John McDonald.
138	18 17 2	1897	Martin Karst.
139	18 21 2	1897	John Mullen.
140	2 8 2	1897	J. McTaggart.
141	4 2 2	1897	Thomas Dickson.
142	1 31 1	1897	John Ormond.
143	22 32 1	1897	Henry Roberts.
144	3 31 1	1897	William J. Miller.
145	3 2 2	1897	Jacob Hutchinson.
146	14 4 2	1897	J. F. Cunningham.
147	13 2 2	1897	James May.
148	3 3 2	1897	James R. Trumpour.
149	2 33 1	1897	James Sproat.
150	Fr. 2 34 1	1897	Gavin Law.
151	3 30 1	1897	Jeremiah Coffey.
152	6 3 2	1897	R. H. Henderson.
153	1 30 1	1897	Thomas Montgomery.
154	4 1 2	1897	James Foster.
	Fr. 3 33 1		
	Fr. 3 34 1	1897	James Foster.

LIST OF LOCAL IMPROVEMENT DISTRICTS IN THE NORTH-WEST TERRITORIES.—*Continued.*

NO. OF DIST.	AREA.	DATE ORGANIS'D	NAME OF OVERSEER.
155	Tp. 4 Rg. 3 W. 2 M., except Village of Alameda.....	1897..	Samuel Birchall.
156	Tp. 2 Rg. 30 W. 1st M.....	1897..	William Taylor.
157	3 32 1	1897..	W. J. Foster.
158	9 30 1	1897..	William Stephen.
159	51 24 4	1897..	John A. McMillan.
160	2 31 1	1897..	Leslie Wright.
161	1 32 1	1897..	J. W. Harris.
162	2 1 2	1897..	Thomas G. Willard.
163	11 30 1	1897..	Kenneth Corbett.
164	3 1 2	1897..	James McIntosh.
165	11 3 2	1897..	D. M. Murray.
166	11 33, 34 1	1897..	William Ramage.
167	2 32 1	1897..	Otis Rathbone.
168	1 2 2	1897..	William Galloway.
169	46 22 2	1897..	
170	25 4 2 except L.S. of Sec. 35	1897..	Malcolm Lang.
171	27 6 2 and Secs. 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17 and 18 in Tp. 28, Rg. 4, W. 2 M.....	1897..	George Fernie.
172	Tp. 10 Rg. 30 W. 1 M.....	1897..	W. M. F. Kay.
173	10 1, 2 2	1897..	Thomas Weatherald.
174	27 5 2	1897..	James Sinclair.
175	11 31 1	1897..	Robert Percy.
176	1 1 2	1897..	
177	Fr. 1 34 1	1897..	Thomas Dowkes.
178	8 7 2	1897..	
179	8, 9 2 2	1897..	John Rutherford.
180	18 23 2 and Secs. 31, 32, 33, 34, 35 and 36 in Tp. 17-23-2	1897..	Thomas Brooks.
181	Tp. 7 Rg. 4 W. 2 M.....	1897..	W. R. Jefferson.
182	8, 9 6 2	1897..	
183	4 33 1	1897..	
184	Fr. 4 34 1	1897..	Allan Oliver Pringle.
185	11 4 2	1897..	Thomas Hourd.
186	9 34 1	1897..	
187	9 1 2	1897..	George D. Dickin.
188	1 6 2	1897..	Samuel Frayn.
189	8, 9 3 2	1897..	Hugh Kippen.
190	7 6 2	1897..	Henry McCartney.
191	21 12 2	1897..	Joseph Shore.
192	12 32 1	1897..	Madison F. Fry.
193	55 26 4	1897..	John McRae.
194	16 20 2	1897..	Frederick J. Tipton.
195	45 22 2	1897..	John Ellis.
196	19 23 2	1897..	
197	17 20 2	1897..	George Goldie.
198	11 26 3	1897..	David Kearns.
199	16 26 2	1897..	
200	16 27 2 and Secs. 12, 13, 24, 25, 26 in Tp. 16, Rg. 28, W. 2 M.....	1897..	John Pascoe.
201	Tp. 17 Rg. 25 W. 2 M.....	1897..	
202	10 25 3	1897..	H. H. Fauquier.
203	18 27 2	1897..	Thomas Winn.
204	18 24 2	1897..	John A. Fleury.
205	17 28 2	1897..	John Wilson.
206	22 3 5	1897..	John S. Hawkey.
207	21 28 4	1897..	Robert A. Begg.
208	26 4 5	1897..	Walter B. Elliott.
209	24 2 5 S. of Bow river.....	1897..	Robert Walsh.
210	22 2 5	1897..	Joseph Hope.

LIST OF LOCAL IMPROVEMENT DISTRICTS IN THE NORTH-WEST TERRITORIES.—*Continued.*

NO. OF DIST.	AREA.				DATE ORGANIS'D	NAME OF OVERSEER.
211	Tp. 20	Rg. 29	W. 4	M.	1897..	William E. McLeod.
212	24	3	5	.....	1897..	George Dick.
213	19	28	4	.....	1897..	W. B. Thorne.
214	21	29	4	.....	1897..	James Grierson.
215	18	29	2	.....	1897..	Colin Campbell.
216	24	1	5	N. of Bow river except Secs. 19, 20, 21, 28, 29, 30, 31, 32, 33 and all Tp. 25, Rg. 1, W. 5 M. except Sec. 6.	1897..	J. W. Hayes.
217	Tp. 26	Rg. 6	W. 5	M.	1897..	F. M. Graham.
218	50	26	4	.....	1897..	Jacob Oswald.
219	24	1	5	S. of Bow river ...	1897..	Major James Walker.
220	45	22, 23	4	N. and W. Battle R.	1897..	William Abbott.
221	34	28	4	.....	1897..	S. P. Fream.
	Fr. 34	29	4	.....	1897..	S. P. Fream.
222	55	22	2	N. and W. Sask. R.	1897..	C. S. Godbout.
223	56	22	4	.....	1897..	Vital Cousineau.
224	34	1	5	.....	1897..	Carl P. Anderson.
225	40	27	4	.....	1897..	.....
226	56	25	4	.....	1897..	Joseph Dupuis.
227	31	1	5	.....	1897..	Elias Schantz.
228	47	23	4	S. and W. of Coal lk.	1897..	T. R. Jevne.
229	40	22	4	.....	1897..	.....
	S. $\frac{1}{2}$ 41	22	4	.....	1897..	William Cook.
230	56	23	4	.....	1897..	F. X. Bibeaud.
231	54	3	5	.....	1897..	.....
	N. $\frac{1}{2}$ 54	4	5	.....	1897..	.....
	pt. of 55	4	5	S. of Lac Ste. Anne.	1897..	Albert Cunningham.
232	47, 48	17	3	N. of Jackfish lake.	1897..	Thomas Duhaime.
233	45, 46	18, 19	3	between Battle river and Saskatchewan river and W. of Thunderchild's reserve.	1897..	Herbert C. Taylor.
234	Tp. 42	Rg. 16	W. 3	M.	1897..	Robert G. Speers.
235	55	25	4	.....	1897..	A. A. Ringuette.
236	40	25	4	.....	1897..	Alfred Glanville.
237	46	22	4	N. Battle river and Pipestone creek; Tp. 46-23-4, N. and E. of Pipestone creek; Tp. 46-21-4, N. of Battle river and including R. Lots 1 to 24 inclusive.	1897..	Albert Normand.
238	Tp. 8, 9	Rg. 5	W. 2	M.	1897..	W. B. Empey.
239	24	4	5	.....	1897..	.....
240	46	24	4	.....	1897..	A. S. Rosenroll.
241	45	24	4	.....	1897..	Christopher C. Reid.
242	18	26	2	.....	1897..	W. J. Glover.
243	17	22	2	.....	1898..	William Cator.
244	Fr. 18	4	2	.....	1898..	.....
	Fr. 19a	4	2	.....	1898..	.....
	S. $\frac{1}{2}$ 19	4	2	.....	1898..	.....
	Fr. 18	5	2	.....	1898..	Thomas Bawdon.
	Fr. 19a	5	2	.....	1898..	A. D. Boylan.
	S. $\frac{1}{2}$ 19	4	2	.....	1898..	Hiram P. Harkness.
245	45, 46	27	2	.....	1898..	.....
246	47	26	2	.....	1898..	.....
247	47	1	3	including River Lots 1 to 4 inclusive, Fr. Tp. 47-28-2 except Secs. 1, 12, 13, 24; Fr. Tp. 48-1-3; Tp. 49-1-3 S. of Sask. river.	1898..	Alfred Bennett.
248	Tp. 48	Rg. 27	W. 2	M., and Secs. 35 and 36 and River Lots 1 to 51 inclusive in Tp. 47-27-2	1898..	James Isbister.
249	Tp. 43	Rg. 16	W. 3	M., N. of Saskatchewan river except Village of Battleford.	1898..	William Latimer.

LIST OF LOCAL IMPROVEMENT DISTRICTS IN THE NORTH-WEST TERRITORIES.—*Continued.*

NO. OF DIST.	AREA.	DATE ORGANIS'D	NAME OF OVERSEER.
250	Tp. 7 Rg. 3 W. 2 M.	1898	E. Richardson.
251	28 4 2	1898	Kristjan Koehn.
252	27 4 2		
	27 3 2	1898	Michael Pachal.
253	26 5 2		
	E. $\frac{1}{2}$ 26 6 2	1898	Donald Garry.
254	28 5 2	1898	George Whalley.
255	45 21 4 and part of Tp. 46-		
	21-4 S. of Battle river	1898	J. T. W. Patterson.
256	Tp. 54 Rg. 19 W. 4 M.	1898	
258	38 27, 28 4 W. and N. of Red Deer river	1898	S. M. Bannerman.
259	Tp. 40 Rg. 26 W. 4 M.	1898	John N. Poole.
261	10 27 3	1898	
262	37 27 4	1898	Anthony Smith.
263	11 23 3	1898	
264	17 24 2	1898	Nelson T. Allcock.
265	48 26 2	1898	Alexander McBeth.
266	18 28 2	1898	W. McBride.
267	24 10 5	1898	Samuel Stirton.
268	2 2 2	1898	Thomas H. Gregson.
270	8 4 2	1898	Willard Scarrow.
271	11 1 2	1898	
272	22 1 5	1898	
273	23 1 5	1898	George Bolt.
275	20 1 5	1898	James Rodgers.
276	17 26 2	1898	David Copeland.
277	56 26 4	1898	Alfred Beaudry.
278	38 26, 27, 28 4		
	39 26, 27 4 except Village of		
	Red Deer, all S. of Red Deer river	1898	Elias Code.
279	Tp. 21 Rg. 1 W. 5 M.	1898	Charles Mickie.
280	36 6 3		
	S. $\frac{1}{2}$ 37 6 3	1898	Henry Smith.
281	46 1 3		
	Fr. 46 28 2	1898	Malcolm McLeod.
282	21 3 5	1898	
283	22 22, 23 4 N. of C. P. R. and Indian reserve except Village of Gleichen	1898	
284	Tp. 7 Rg. 5 W. 2 M.	1898	
287	44 1 3	1898	Charles Damase Rocette.
288	45 27 2 part S. of Sask. river		
	and 45a 27 2 including all R. Lots	1898	Franz J. Hauser.
291	20 21 2	1898	J. J. Grant.
292	13 4 2	1898	
293	22 29 4	1898	Albert Casely.
294	23 29 4	1898	George Madge.
295	12 30 1	1898	Aaron Morley.
296	13 30 1	1898	Robert Vance.
297	16 30 1	1898	Harry Bayless.
298	14 30 1	1898	John Mullen.
299	15 30 1	1898	Joseph James.
300	17 30 1	1898	
302	12 31 1	1898	A. W. McClure.
303	13 31 1	1898	Samuel S. Thompson.
304	14 31 1	1898	R. J. Phin.
305	15 31 1	1898	Malcolm McNeil.
306	16 31 1	1898	Albert Webster.
307	17 31 1 and Secs. 1, 2, 11, 12,		
	13, 14, 23, 24, 25 and 26 in Tp. 17-32-1	1898	James Murphy.

LIST OF LOCAL IMPROVEMENT DISTRICTS IN THE NORTH-WEST TERRITORIES.—*Continued.*

NO. OF DIST.	AREA.				DATE ORGANIS'D	NAME OF OVERSEER.
308	Tp. 18	Rg. 31	W. 1	M	1898	John A. Brown.
309	13	32	1		1898	Harry Holmes.
310	14	32	1		1898	Roderick McCormick.
311	15	32	1		1898	George Martin.
312	16	32	1		1898	William Martin.
313	17	32	1	except Secs. 1, 2, 11, 12, 13, 14, 24, 25, 26	1898	Alexander McRae.
314	Tp. 19	Rg. 32	W. 1	M	1898	James Ormiston.
315	12	33	1			
	Fr. 12	34	1		1898	Albert S. Clarke.
316	13	33	1			
	Fr. 13	34	1		1898	Donald McKinnon.
317	14	33	1			
	Fr. 14	34	1		1898	Donald Black.
318	15	33	1	except Village of Wapella	1898	Archibald Hare.
319	Tp. 16	Rg. 33	W. 1	M	1898	David Dalziel.
321	18	33	1		1898	W. M. Gordon.
322	37	27	4		1898	N. Nielson.
323	37	26	4		1898	Thomas Hoskin.
324	36	27	4		1898	William Inglis.
325	36	26	4		1898	Hiram Letts.
326	42	25	4		1898	
327	46	25	4		1898	L. D. Hanna.
328	45, 46	20	4	parts S. and W. Battle river and Driedmeat lake	1898	G. T. Campbell.
330	Tp. 21	Rg. 11	W. 2	M	1898	E. W. Webster.
331	42	2	3		1898	Matthew Hall.
333	42	3	3	except Village of Rosthern	1898	Peter Siemens, jr.
334	Tp. 43, 43a	Rg. 3	W. 3	M	1898	Heinrik Wall.
335	44	3	3		1898	Francois Ripaud.
336	45, 46	3	3		1898	A. N. Peterson.
337	Secs. 28, 29, 30, 31, 32 and 33 in Tp. 48-2-3; Secs. 4, 5, 6, 7, 8, 9, in Tp. 50-2-3; W. $\frac{1}{2}$ Tp. 49-2-3; four east tiers of Secs. in Tp. 49-3-3; and Secs. 1, 2, 3, 4, 9, 10, 11, 12 in Tp. 50-3-3.				1898	
338	Tp. 40	Rg. 4	W. 3	M	1898	Hermann Neufeldt.
340	42, 43	4	3		1898	Peter Heppner.
341	44	4	3	and part of Tp. 45-4-3 S. of river	1898	Peter Regier.
343	Tp. 42	Rg. 5	W. 3	M	1898	Dicolrich Neufeldt, jr.
344	43	5	3	and part of Tp. 34-5-3 S. of river	1898	
345	Tp. 15	Rg. 8	W. 2	M	1898	
346	16	8	2		1898	James S. McDonnell.
347	17	8	2		1898	James McCowan.
348	18, 19a, 19	8	2	S. of Qu'Appelle R.	1898	James Brown.
349	18, 19a, 19	8	2	N. of Qu'Appelle R.	1898	Alexander Campbell.
350	15	9	2		1898	Adam Johnston.
351	16	9	2		1898	W. J. Fleming.
352	17	9	2		1898	W. P. Osler.
353	18, 19a	9	2		1898	George P. Campbell.
354	19	9	2		1898	J. B. Hermiston.
355	15	10	2		1898	James Pollock.
356	16	10	2		1898	George E. Cole.

LIST OF LOCAL IMPROVEMENT DISTRICTS IN THE NORTH-WEST TERRITORIES.—*Continued.*

NO. OF DIST.	AREA.	DATE ORGANIS'D.	NAME OF OVERSEER.
357	Tp. 17 Rg. 10 W. 2 M., except Town of Wolseley.....	1898..	Frank Gates.
358	Tp. 18 Rg. 10 W. 2 M., S. Qu'Appelle river.....	1898..	David Sexsmith.
359	19, 19a 10 2 and part of Tp. 18-10-2 N. of Qu'Appelle river.....	1898..	James Balfour, sr.
360	Tp. 6 R. 29, 30 W. 4 M.....	1898..	Francis Willock.
361	6 1 5.....	1898..	John Brown.
362	Fr. 5 1 5.....	1898..	H. R. Parker.
363	7 1 5.....	1898..	James Taylor.
364	Fr. 8 1 5.....	1898..	James Taylor.
365	5 29, 30 4.....	1898..	Wilfred Wilde.
366	16 5 2 except Village of Broadview.....	1898..	T. B. Waddington.
367	Tp. 1 Rg. 5 W. 2 M.....	1898..	David McNabb.
368	46 26 2 including all R. Lots and Fr. Tp. 45-26-2 including R. Lots 1 to 23 inclusive.....	1898..	A. H. de Tremendreau.
369	Tp. 15 Rg. 11 W. 2 M.....	1898..	A. C. Tracy.
370	28 7 2.....	1898..	O. T. Hayes.
371	29 7 2 and two west tiers of Secs. in Tp. 29-6-2; Secs. 5, 6, 7, 8 in Tp. 30-6-2, and Secs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 in Tp. 30-7-2.....	1898..	James Prowse.
372	Tp. 29 Rg. 8 W. 2 M., and Secs. 31, 32, 33, 34, 35, 36 in Tp. 28-8-2; two east tiers or Secs. in Tp. 29-9-2; Secs. 1, 2, 11, 12, in Tp. 30-9-2; and Secs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 in Tp. 30-8-2.....	1898..	John McInnes, jr.
373	Tp. 24 Rg. 4 W. 2 M.....	1898..	Thomas McCloy.
374	48 25 2.....	1898..	F. D. Cherry.
375	47 25 2.....	1898..	Richard Stewart.
376	48, 49 23 2 parts between N. and S. Saskatchewan rivers.....	1898..	James Dunlop.
377	Tp. 48, 49 Rg. 22 W. 2 M., parts between N. and S. Saskatchewan rivers.....	1898..	Samuel Leask.
378	Tp. 46 Rg. 25 W. 2 M.....	1898..	George S. Reid.
379	47, 48 24 2 parts between N. and S. Saskatchewan rivers.....	1898..	Joseph Gulash.
380	Tp. 24 Rg. 5 W. 2 M., Secs. 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 and 36 in Tp. 23-5-2; Secs. 25, 26, 27, 34, 35 and 36 in Tp. 23-6-2; and the E. $\frac{1}{2}$ Tp. 24-6-2.....	1898..	Edward Fred Everest.
381	Tp. 27 Rg. 7 W. 2 M.....	1898..	C. Christianson.
382	E. $\frac{1}{2}$ 26 7 2 and Secs. 4, 5, 8 and 9 together with W. $\frac{1}{2}$ Tp. 26-6-2.....	1898..	John Johnston.
383	Tp. 37 Rg. 2 W. 5 M.....	1898..	William Rutherford.
384	37 1 5.....	1898..	John H. Ward.
385	W. $\frac{1}{2}$ 15 13 3.....	1898..	
386	E. $\frac{1}{2}$ 15 14 3.....	1898..	
387	3 4 2.....	1898..	
388	S. $\frac{1}{2}$ 4 4 2.....	1898..	

LIST OF LOCAL IMPROVEMENT DISTRICTS IN THE NORTH-WEST TERRITORIES,—*Continued.*

NO. OF DIST.	AREA.	DATE ORGANIS'D	NAME OF OVERSEER.
385	Secs. 29, 30, 31 and 32 in Tp. 48-3-3; Secs. 5, 6, 7, 8, 17, 18, 19, 20, 29 and 30 in Tp. 49-3-3; Tp. 49-4-3 except Secs. 6, 7, 18, 19, 30, 31, 32, 33, 34, 35, 36; Secs. 25, 26, 27, 28, 29, 32, 33, 34, 35 and 36 in Tp. 48-4-2.....	1898..	Robert Sterling.
386	Secs. 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, 29 and 30 in Tp. 45-18-2; Secs. 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 34, 35 and 36 in Tp. 45-19-2.....	1898..	Peter Aikenhead.
387	Tp. 31 Rg. 2 W. 5 M.....	1898..	William Hunsberger.
388	19, 19a 7 2 S. of Qu'Appelle R.	1898..	Norman McLeod.
389	19 7 2 N. of Qu'Appelle R.	1898..	John Gravy.
390	Secs. 19, 20, 21, 28, 29, 30, 31, 32, 33 in Tp. 24-1-5 N. of Bow river; Sec. 6 in Tp. 25-1-5; Tp. 24-2-5 N. and E. of Bow river, and Secs. 1, 2, 3, 10, 11, 12 in Tp. 25-2-5.....	1898..	A. S. McKay.
391	Secs. 1, 2, 3, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25, 26 and 27 in Tp. 47-27-2.....	1898..	Albert Hodgson.
392	Secs. 4, 5, 6, 7, 8, 9, 16, 18, 17, 19, 20 and 21 in Tp. 47-27-2 and Secs. 1, 12, 13, 24 in Tp. 47-28-2.....	1898..	James Adams.
393	Tp. 36 Rg. 5 W. 3 M.....	1898..	Thomas Copland.
394	18, 19, 19a 3 2 N. and E. of Round lake.....	1898..	Nils Dahl.
395	Tp. 13 Rg. 3 W. 2 M.....	1898..	Alfred Law.
396	36 28 4 E. of Red Deer R.	1898..	George Fleming.
397	20 14 2	1898..	A. E. Nicholls.
398	20 13 2	1898..	John McLean.
399	21 14 2 S. of Qu'Appelle river and lake.....	1898..	Alfred Dunsby.
400	Tp. 50 Rg. 18 W. 4 M.....	1898..	Asa Erickson.
401	51 18, 19 4 W. of Beaver lake	1898..	Daniel Francis.
402	51 17 4 E. of Beaver lake.....	1898..	
403	52 17 4 E. of Beaver lake.....	1898..	J. D. McAlister.
404	52 18 4 W. of Beaver lake	1898..	John Dean.
405	50 19 4	1898..	Hugh Mitchell.
406	53 19 4	1898..	Abel Hallberg.
407	56 18 4	1898..	Harry Belcher.
408	41 26 4	1898..	David McDonald.
409	20 28 4	1898..	A. W. H. Thompson.
410	28 3 2	1898..	Gottlieb Battke.
411	25 31 1	1898..	Caspar Radgiber.
412	23 13 2; W. $\frac{1}{2}$ Tp. 22-13-2; Secs 1, 2, 11, 12, 13, 14, 23, 24, 25, 26, 35, 36 in Tp. 23-14-2.....	1898..	William Hayes.
413	Tp. 17 Rg. 19 W. 2 M., except town of Regina.....	1898..	
414	Tp. 41 Rg. 25 W. 4 M.....	1898..	F. C. Zuehlke.
416	Secs. 19, 20, 21, 28, 29, 30, 31, 32 and 33 and R. Lots 25 to 48 inclusive in Tp. 45-27-2 and W. $\frac{1}{2}$ Tp. 46-27-2.....	1898..	Norman McLeod.
417	Tp. 19 Rg. 31 W. 1 and Secs. 6, 7 and 18 in Tp. 19-30-1.....	1898..	Franklin Perrin.

LIST OF LOCAL IMPROVEMENT DISTRICTS IN THE NORTH-WEST TERRITORIES.—*Continued.*

NO. OF DIST.	AREA.	DATE ORGANIS'D	NAME OF OVERSEER.
418	W. $\frac{1}{2}$ Tp. 8, 9 Rg. 1 W. 5 M., lying W. of N. Fork river; E. $\frac{1}{2}$ and Secs. 16, 17, 18, 19, 20, 21, 28, 29 and 30 in Tp. 9-2-5; W. $\frac{1}{2}$ and Secs. 13, 14, 15, 22, 23, 24, 25, 26, 27, 34, 35 and 36 in Tp. 8-2-5 and part of Tp. 7-1-5 N. of Middle Fork and W. of North Fork.....	1898.	
419	W. $\frac{1}{2}$ and Secs. 1, 2, 3, 10, 11 and 12 in Tp. 8-2-5; part N. of Middle Fork of Tp. 7-2-5; Secs. 1, 2, 11, 12, 13, 14, 23, 24, 25, 26, 35 and 36 in Tp. 8-3-5; Secs. 1, 2, 9, 10, 11, 12, 13, 14, 15, 16, 23, 24, 25, 26, 35 and 36 in Tp. 7-3-5.	1898..	James Carter.
420	Tp. 24 Rg. 3 W. 2 M	1898..	William S. Outhwaite.
421	16 19 2	1898..	Philip Nichalls.
422	49 27 4	1898..	E. T. Buckell.
423	50 27 4	1898..	P. E. Dalquist.
424	49 26 4	1898..	E. J. Larose.
425	48 25 4	1898..	Fred. Falkenburg.
426	21 13 2 N. of Qu'Appelle river except the Village of Qu'Appelle	1898..	Thomas Redmond.
427	Tp. 25 Rg. 7 W. 2 M. W. $\frac{1}{2}$ 25 6 2 and Secs. 25, 26, 35 and 36 in Tp. 25-8-2	1899..	James Malcolm, sr.
428	Tp. 25 Rg. 5 W. 2 M. E. $\frac{1}{2}$ 25 6 2	1899..	Robert Rousay.
429	43 23 4	1899..	O. C. Ravensberg.
430	43 22 2 and part W. of Red Deer lake of Tp. 43-21-4.....	1899..	John A. Bergman.
431	Tp. 44 Rg. 23 W. 4 M	1899..	Ellev Bye.
432	46 20 4	1899..	Jakob Elness.
433	48 21 4	1899..	John Moe.
434	47 24 4	1899..	Frank Lucas.
435	44 22 4	1899..	John G. Wilcher.

Before entering into any discussion of the suitability of The Local Improvement Ordinance to meet existing conditions in the Territories, or comparing it with the results which would be obtained under municipal organisation, it will be instructive to note briefly the work accomplished in local improvement districts during the past year.

STATEMENT.

Amount collected for taxes on lands owned by companies or other non-resident owners, and for commutation.....	\$10,373 15
Number of miles of road graded.....	488
“ “ cleared.....	272
“ miles of fireguard ploughed.....	982
“ bridges built.....	50
“ repaired.....	78
“ culverts built.....	187
“ repaired.....	74
“ dams built.....	12

Number of dams repaired	29
“ holes, old wells, cellars, or sloughs filled	820
“ drains made	52
“ yards of corduroy made	1,977
“ days worked in commutation of local improvement tax	24,447
Streets improved at Broadview, Alameda, Lumsden, South Edmonton, Pincher Creek and Wetaskiwin	
Average amount paid overseers of districts for making assessments, overseeing work and performing other duties connected with the district	\$23 56

The foregoing statement indicates that the organisation of local improvement districts has resulted in the completion by the people themselves of a large mass of work that would otherwise have fallen upon the Government, and has provided machinery by which the non-resident land owners can be forced to pay their share of the cost of the improvements undertaken by the resident population but which benefit all lands equally.

The enforcement of this Ordinance has been criticised from the standpoint that an enactment of this kind was not necessary at the present time, that in many districts which have been formed no improvement of roads or other local repairs were required, and if needed they should be undertaken by the Government; and that the work performed by districts would be wasted owing to want of intelligence on the part of the overseers in laying out or superintending the work.

The claim that an Ordinance imposing local work was not needed is best answered by the statement given above which shows the work actually performed by organised districts last year. It is doubtless true that in some of the districts organised there is at present not much necessity for grading roads but it can, I think, be confidently asserted that in every district where road building is not required there is a possibility of expending all taxes or labour in improving the general condition of the district by providing fire guards, destroying noxious weeds, building dams, repairing bridges or culverts and in improving fords.

The claim that any improvement of roads, construction of bridges or other work of a public character should be undertaken by the Government and not left to the residents to complete must be answered from two or three standpoints. In the first place it may be noted that in the older provinces, and also in the United States, many of the officials charged with the work of providing good roads have pointed out that better results could be obtained if all the taxes collected for road improvements were expended through the Government rather than through the municipal organisation, and that no commutation of these taxes by labour should be allowed, claiming that this system would provide for uniformity in methods of road construction, the completion of work under contract and for proper technical supervision of the work. This claim is doubtless well founded, but, in considering the question as applied to the Territories, it must first be noted that up to the time of the enactment of The Local Improvement Ordinance no taxes for road improvements were imposed, and any and all expenditure for this class of work had to be provided from the general Territorial revenue which was quite inadequate to enable the Government to complete the large bridges or carry on the other work of a distinctly public character, and at the same time undertake these smaller works or repairs which should properly be undertaken by the people themselves either by the payment of a tax or by commuting the tax by labour.

In the second place it must be remembered that up to the time of the organisation of a local improvement district there is no organised machinery through which any tax for local improvements can be imposed and it can, I think, be shown that The Local Improvement Ordinance provides the cheapest and simplest machinery for that purpose. The time will no doubt come when consideration will have to be given to the question of the collection of a non-commutable tax for this purpose and its expenditure by the department, but until the residents of the Territories become thoroughly convinced of the desirability of such an amendment to the present provisions of the law it will no doubt be wise to continue the system now in force.

There is a certain amount of foundation for the claim that the work performed by districts will not be thoroughly done owing to the want of knowledge and experience by the overseers. This difficulty can, however, be largely overcome by giving the work performed in the districts some technical supervision from time to time, and also by the education of the overseers as far as possible by giving them detailed instructions as to correct methods of road making. Last year, as has already been explained, a Manual of Instructions for the Guidance of Overseers was issued, containing concise instructions as to road building, constructing culverts, bridges, or repairing existing structures, as well as with reference to other duties they are called upon to perform; and by supplementing this manual from time to time with further instructions, and by giving them some object lessons in the work completed by the department in or near their districts, much can be done towards educating not only the overseers but all the residents of local improvement districts as to the proper methods to be adopted in completing their local work.

If it is conceded that the time has come when the residents of the Territories should undertake the work of local improvements it can, I think, be demonstrated that The Local Improvement Ordinance provides a better system for reaching this end than would be provided by the usual system of dividing the country into municipalities as has been done in the older provinces of the Dominion and in Manitoba.

Under the local improvement district system the organisation of districts is a simple and exceedingly inexpensive matter, the official machinery for conducting the business of the district is equally simple and inexpensive, and the voice of the majority of the residents of the district decides each year where improvements are to be undertaken and their character. The whole work and taxes of the district are to be devoted to the completion of certain fixed internal improvements, and there is no chance offered of incurring bonded or debenture indebtedness of the kind that has characterised certain ambitious municipalities.

In the local improvement districts the annual tax to be paid by each quarter section is not a matter to be determined by an assessment to meet existing or contemplated liabilities, but is the same year after year, and the improvements during the year are dependent upon the year's revenue without any possibility of incurring debt by anticipating future revenue.

As there are at the present time only two rural municipalities in the Territories it is difficult to make a definite comparison between them and the local improvement districts with reference to the performance of local improvements proper, but from the information available it may be noted that there seems to be very little difference in the annual charge in the municipalities and local improvement districts for road improvements, viz., \$2.50 on each quarter section. In the municipalities, how-

ever, the land is also liable for certain debenture indebtedness, other than school debentures, while land in the local improvement districts has no such indebtedness and can have none under the present provisions of the law.

If a comparison is made with the municipalities in Manitoba adjoining the eastern boundary of the Territories, the conditions are certainly all in favour of the local improvement district system as compared with the municipal system. In the municipalities referred to the annual charge for municipal purposes, including schools, upon a quarter section, are understood to vary from \$10 to \$20. In the local improvement districts adjoining these municipalities on the Territorial side of the boundary, the annual tax upon a quarter section for schools and local improvements does not exceed \$6, and as the districts are not permitted to incur debenture indebtedness for the latter class of work the sum mentioned will probably cover the taxation for some time to come, while on the other hand the tax in municipalities must necessarily increase with each issue of debentures for internal improvements.

The provisions of The Local Improvement Ordinance regarding the payment of overdue taxes are a somewhat radical departure from the usual enactments regarding this subject. These provisions do away with all the trouble and litigation which frequently characterise the sale of lands by public auction for arrears of taxes, and relieve the district of all trouble of the collection of overdue taxes, while giving them a certainty as to payment of these taxes at the end of a year after that within which they are imposed.

The organisation of local improvement districts has immensely simplified the completion of our departmental public works throughout the Territories, the four hundred and odd overseers of districts constituting a body of representative foremen whom we have been able to employ in completing a very considerable portion of the work of road grading and repairs provided for in different parts of the Territories, and also in taking charge of public wells, dams or other public works which require local attention and supervision. The employment of overseers in completing certain of our public works also affords an opportunity of giving them some further instruction in the proper methods of completing work, and gives such of the residents of the districts as may desire employment a chance to provide teams and labour under a foreman whom they know as their district overseer as well as to participate in the public expenditures in these districts.

On the whole The Local Improvement District Ordinance seems to meet with the approval of the residents of districts that have been formed. In the southern or ranching portion of the Territories it is claimed by some persons that the provisions of the Ordinance as at present framed do not meet special conditions existing in those parts of the Territories, but in at least four hundred out of the four hundred and fourteen districts organised the residents are satisfied with the Ordinance and are loyally carrying out its provisions.

THE COAL MINES REGULATION ORDINANCE.

The coal mining industry is rapidly assuming large proportions in the Territories and promises in the near future to afford employment for a large number of miners. At the present time the large coal mines are confined to Anthracite, Canmore, Lethbridge and Roche Percee collieries,

but a number of mines are being operated in a small way at other points which may develop into extensive undertakings as the local demand for coal increases. The accompanying schedule gives the names and locations of mines now being operated.

SCHEDULE OF COAL MINES IN OPERATION IN THE TERRITORIES
DURING 1898.

NAME OF MINE.	LOCATION.	OPERATED BY	CHARACTER OF COAL.
Milner's	Edmonton	John Milner	Bituminous
Pratt & Coit	"	G. Pratt & F. K. Coit	"
Moran's	"	Sam Moran	"
Humberstone No. 1	"	Wm. Humberstone	"
" No. 2	"	"	"
White Star	Black Mud	Tempest & Co.	"
Frank Smith No. 1	Sturgeon river	Frank Smith	"
" No. 2	"	"	"
Gibbard & Boutwell	"	Gibbard & Boutwell	"
Black	Morinville	Edward Chevigney	"
Cunliffe	Fort Saskatchewan	R. Cunliffe	"
Steeves No. 1	South Edmonton	D. Steeves	"
" 2	"	"	"
North Star No. 1	"	Ed. Martin	"
" 2	"	"	"
Knee Hill	Knee Hill	Thos. Hunt & J. Read	"
"	"	J. Grenier	"
Canmore	Canmore	H. W. McNeill Co. Ltd.	"
Anthracite	Anthracite	"	Anthracite
Hassard	Coalfields	Souris Coal Mining Co.	Bituminous
Roche Percee	"	Roche Percee Colliery Co. ..	"
Lethbridge	Lethbridge	Alberta Railway & Coal Co. ..	"
Pearce	Edmonton	Pearce & Co.	"
McAllister	"	J. McAllister	"
Clover Bar Nos. 1 and 2	Clover Bar	Chas. Rodrigue	"
Cascaden & Taylor	Edmonton	John Banach & M. Haynach ..	"

The output of the twenty-seven mines above mentioned during the past year and the number of men employed in coal mining was as follows:

Number of men employed	832
Bituminous or soft coal mined	315,661 tons
Anthracite	23,000 "

The returns of accidents connected with the mining of coal during the past year is appended in schedule form, but this return is probably somewhat incomplete as the owners of small mines have not made returns of accidents connected with their operations.

SCHEDULE OF ACCIDENTS AT COAL MINES DURING 1898.

NAME OF MINE.	CHARACTER OF ACCIDENT.			TOTAL OF ACCIDENTS.
	Resulting in death.	Serious injury.	Slight injury.	
Lethbridge		3	12	15
Anthracite		1		1
Canmore	3			3
Knee Hill			1	1
				—
				20

The average of one accident for each 15,782.05 tons of coal mined, and one death for each 112,887 tons mined, shows the absolute necessity for a systematic and careful inspection of the mines and some government supervision of their operations.

The first Territorial enactment regarding coal mining was passed in 1893. The Coal Mines Regulation Ordinance passed at that time was subsequently amended to provide for conditions which arose under the actual operation of the mines, and at the last session of the Legislative Assembly the Ordinance was amended and consolidated after a careful consideration of recommendations received from the inspector of coal mines and the owners or managers of several of the mines.

In May, 1897, Mr. William Stafford, of Lethbridge, who had been employed as inspector of coal mines, resigned and in November of that year Mr. Dan Evans, of Edmonton, was appointed in his place. Prior to Mr. Evans' appointment the inspection of mines had been confined to the coal mines at Anthracite, Canmore and Lethbridge, but since Mr. Evans took over the work we have endeavoured to have all the coal mines inspected and to make much more frequent inspection than was formerly attempted. When the first inspection of smaller mines was made it was found that the owners were carrying on their operations without reference to the provisions of The Coal Mines Regulation Ordinance, and in some instances the workings were of the most primitive and dangerous character. This condition of affairs has now been greatly improved and the frequent visits of the inspector has resulted in better methods of mining both in the large and small mines, and a very commendable willingness has been displayed by all to comply with the provisions of the law and the instructions of the inspector.

Under the provisions of the Ordinance as amended and consolidated at the last session we have endeavoured to provide that all managers of coal mines, and the pit and fire bosses employed in them, shall hold proper certificates of qualification, and during the past year eighteen certificates of this character have been issued as shown hereunder :

SCHEDULE OF CERTIFICATES ISSUED TO MANAGERS OR PIT OR FIRE
BOSSSES IN COAL MINES.

NAME.	ADDRESS.	CERTIFICATE.
Dan Evans	Edmonton	Manager's
W. D. L. Hardie	Lethbridge	"
James J. Morris	Canmore	"
Wm. Hamilton	Coalfields	"
John Little	"	"
O. E. S. Whiteside	Anthracite	"
Gus. Ostheidt	"	Pitt boss
John Musgrove	Canmore	"
Charles Emmerson	"	"
Alfred Davis	Lethbridge	"
John C. Livingstone	"	"
Watkin E. Watkins	Anthracite	Fire boss
John Wilson	Canmore	"
John W. Watkins	"	"
William Cowan	"	"
John James McKay	Lethbridge	"
Robert Scott	"	"
Robert Livingstone	"	"

We have provided the necessary machinery for the holding of examinations from time to time at which candidates who desire to obtain certificates of qualification, either as managers or pit or fire bosses, can present themselves, and during the past year examinations of this kind were held at Canmore and Lethbridge.

When the question of the safety of the lives of the large number of men engaged in coal mining in the Territories is considered it is quite evident that if the present output of coal is largely increased in the near future, as seems quite probable, the inspector will have sufficient work to keep him constantly employed in looking after the twenty-five or thirty mines which will be in operation, and during the next year our expenditure for this portion of the departmental work will have to be materially increased.

Referring to the statement of the quantity of coal mined in the Territories during the past year, it is worthy of note that the larger part of the output has been mined for export or for consumption by the Canadian Pacific Railway Company. From the information obtainable it seems that not more than 75,000 to 100,000 tons of the 338,661 tons of coal mined is consumed in the Territories for domestic purposes, the remainder being mined for export to Manitoba, the United States and British Columbia, or for use in the operation of the different railway lines. If we assume that the export trade remains at its present dimensions it is quite evident that a material increase must occur in the consumption by the railway lines and for domestic purposes in the near future consequent upon the rapid increase which is taking place in the Territorial population, and the enlarged railway business which will naturally follow.

IRRIGATION DISTRICTS ORDINANCE

In the southern and south-western portions of the Territories the question of irrigation is now probably the most important one requiring

attention. The fact that agriculture in these portions of the Territories without the artificial application of water to the growing crops is a very precarious undertaking was combatted for some years by residents of the districts and by land owning corporations, but the long succession of failures on the part of those who attempted to grow crops in the ordinary way, and the marked success which has attended the growth of crops by irrigation has at last convinced the most sceptical of the benefits to be obtained from irrigation and the necessity for the construction of ditches and canals to divert the water from the streams so as to bring it to the areas which can be cultivated.

The faith of the present residents of the arid region in the principle of irrigation will be appreciated from a reference to the accompanying schedule of ditches and canals which have been constructed to supply water for irrigation. A schedule is also appended showing the records which have been made of water to be used for domestic purposes.

SCHEDULE OF IRRIGATION DITCHES CONSTRUCTED AND IN OPERATION UNDER PROVISIONS OF THE IRRIGATION ACT.

OWNER OF DITCH OR CANAL —NAME.	ADDRESS.	STREAM FROM WHICH WATER IS DIVERTED.	LENGTH OF DITCH OR CANAL, MILES	AREA IRRIGATED.
Calgary Irrigation Co.	Calgary	Elbow river	61.9	45400
Calgary Hydraulic Co.	"	Bow river	7.5	6000
Botterell, E. H.	Cochrane	Dog Pound creek	1.0	80
British American Rancho Co.	Calgary	Big Hill creek	1.5	68
Cochrane Rancho Co.	Macleod	Belly river	3.1	200
Dowling, Mrs. Annie.	Priddis	Fish creek	1.3	110
Ellis, J. H.	Springbank	Elbow river	0.8	110
Flint, Charles.	Priddis	Fish creek	1.5	120
Glenn Estate	Calgary	"	1.0	130
Hull, W. R.	"	"	1.0	500
Moseley, W. R.	Priddis	"	1.2	130
Ockley, J. W.	"	"	0.8	110
Priddis, C.	"	"	2.1	130
Russell, George F.	Lethbridge	Pot Hole creek	1.5	80
Hull, W. R.	Calgary	Bow river	2.0	800
Hone, Addison	Priddis	Fish creek	0.5	40
Young, George T.	"	"	1.2	310
Gardner, M.	Springbank	Small creek trib. of Elbow river	2.3	360
Walsh, Senr. and Junr.	Cochrane	Beaver Dam creek	2.7	258
Inglis, R. C.	"	"	1.0	105
Hull, W. R.	Calgary	Mosquito creek	1.2	105
Bell-Irving & Kerfoot	Cochrane	Grand Valley creek	5.3	580
Shea & Madden	"	Beaver Dam creek	2.2	249
Ricardo & Bevan	Calgary	Bow river	3.1	250
Glengarry Rancho Co.	New Oxley	Trout creek	2.8	473
Findlay & McDougall	High River	High river	8.5	5400
Reid Brothers	Cochrane	Dog Pound creek	1.3	114
Edgar, Wm.	Priddis	Fish creek	1.4	80
Quirk, John	Millarville	Sheep river	2.7	350
"	"	Springs and overflow of Sheep river	0.9	134
Turner, Robert	"	Sheep river	1.2	145
McLaughlin, J. W.	High River	High river and a trib. thereof	3.8	680
May, E. G.	Calgary	Small creek, trib. of El- bow river	1.0	103
Stuart, W. W.	Jumping Pound	Jumping Pound creek	0.6	60

SCHEDULE OF IRRIGATION DITCHES CONSTRUCTED AND IN OPERATION UNDER PROVISIONS OF THE IRRIGATION ACT.—*Continued.*

OWNER OF DITCH OR CANAL —NAME.	ADDRESS.	STREAM FROM WHICH WATER IS DIVERTED.	LENGTH OF DITCH OR CANAL, MILES	AREA IRRIGATED.
Lott, H. S.	Calgary	Elbow river and creek trib. thereof	1.7	360
Vaudin, E. H. O.	"	Elbow river	0.5	200
Patterson, Lachance et al.	Macleod	Belly river	3.4	1440
Broderick, Mrs. Janie.	High River	Little Bow river	1.1	158
Graves, H. D.	Calgary	Dog Pound creek	2.0	95
Millar, M. T.	Millarville	Sheep river	1.1	165
Fraser & McKinnon.	"	"	1.1	315
Bell, Mrs. Mary.	"	"	0.9	100
Aird, James	"	"	0.4	110
Newson, A. C.	Priddis	A spring creek.	2.2	240
Anderson, Senr., G.	Millarville	Sheep river	0.4	20
Anderson, Junr., G.	"	"	0.6	80
Waite, J. T.	"	"	1.0	120
Aird, A.	"	"	1.5	105
Fisher, Joseph	"	"	1.7	375
Smith & Tee.	High River	High river	2.3	265
Quorn Rancho Co.	Dewdney	Sheep river	4.0	555
Leeds, Elliott & Co.	New Oxyley	Willow creek	3.2	240
Houk, George	Pot Hole	St. Mary river	0.7	88
N. W. M. Police	Macleod	Waterton river	2.0	120
Lees, W. R.	Pincher Creek ..	Mill creek	0.7	200
Burn, H. St. G.	Livingstone	Connelly creek	0.2	100
Skrine, W. C.	High River	Mosquito creek	0.6	75
Bannister, A. E.	Davisburg	Bow river	1.8	160
Newbolt, W. R.	Calgary	"	2.5	83
Ware, John	Millarville	Sheep river	0.8	107
Nelson, John	Livingstone	Old Man river	1.0	180
George Brothers	Macleod	Beaver creek	1.9	400
Meade, F. A.	Livingstone	Todd creek	0.8	200
Elton, C. W. S.	"	"	0.6	50
Gunn, W. M.	"	"	0.5	90
Kemmis, John	"	"	1.6	150
Lane, George & Co.	Calgary	Kuntz creek	3.2	350
Sheep Creek Irrigation Co.	Dewdney	Sheep river	6.0	1206
Rodgers, James	"	A spring creek	0.5	32
Smith, J. L.	Lethbridge	St. Mary river	1.7	87
Head, J. J.	Cardston	Lee creek	1.0	71
Card & Hammer	"	"	5.1	1002
Hunter, Hunter & Edgar	Priddis	Fish creek	2.2	347
Genge, Colin	Macleod	Willow creek	2.0	175
Wallace, R. A.	High River	High river	10.0	1985
Johnston, J. L.	Calgary	Rosebud river	1.5	215
Macmillan, J. A.	"	Sheep river	4.2	799
Paterson, J. D.	Priddis	Fish creek	1.6	116
Walker, B. G.	Calgary	Elbow river		175
Warren, J. C.	Millarville	A spring creek	1.0	80
Jackson, F. A.	"	A spring creek	0.4	75
Kearl, James	Cardston	St. Mary river	1.0	148
McHugh, T. P.	Gleichen	A spring	0.5	100
Austin & Matthewson	Dewdney	Sheep river	1.2	71
Marsh, D. W.	Calgary	Maple creek	0.8	110
Quail, W. H.	Lyndon	Creek trib. to Trout creek	1.8	30
Pilling, Senr., R.	Cardston	St. Mary river	1.2	67
Cook, H. F.	"	Boundary creek	1.7	148
Cox, D. H.	Mountain View ..	Mahmee creek	1.2	80
Bebo, Nelson	Calgary	Springs	1.1	85
Fauquier, H. H.	Maple Creek	Hay creek	1.1	50
Herron, J. and others	Pincher Creek ..	Pincher creek	3.0	975
Hackney, D. G.	Priddis	A spring creek	2.2	119
Furman, J.	Cardston	A lake	1.0	25

SCHEDULE OF IRRIGATION DITCHES CONSTRUCTED AND IN OPERATION UNDER PROVISIONS OF THE IRRIGATION ACT.—*Continued.*

OWNER OF DITCH OR CANAL —NAME.	ADDRESS.	STREAM FROM WHICH WATER IS DIVERTED.	LENGTH OF DITCH OR CANAL, MILES	AREA IRRIGATED.
Wells, W. C.	Palliser, B.C.	Behanhouse and Rancho creeks	1.9	300
Lucas, Wm.	Markdale, Ont.	Elbow river	1.8	306
Maloney, Wm.	Calgary	Bow river	2.2	450
Payne, William	Mountain View	Mahmee creek	0.5	37
Lindquist, A. A.	Cardston	Boundary creek	1.0	109
Peecock & Sheldon	Maple Creek	Hay creek	0.2	125
Short, J. W.	High River	Trib. of High river	2.0	240
Peecock, F. W.	Maple Creek	Hay creek	0.2	255
Jones, W. S.	"	"	0.3	25
Hammond, G. R.	"	Trib. of Hay creek	0.9	25
Watres, W.	Coutts	Milk river	2.6	320
Canadian Land & Rancho Co.	Crane Lake	Skull creek	2.5	930
"	"	Bridge (or Dirt creek)	0.5	120
Branniff, D.	Maple Creek	Bear creek	0.6	200
McCarthy, C.	"	"	0.2	15
Maunsell Brothers	Macleod	Old Man river	3.3	580
Blake & Miles	Livingstone	Heath creek	0.9	100
Sharples, C.	New Oxley	Trout creek	1.0	650
Moore, Moorhead & Fearon	Maple Creek	Piapot creek	3.0	300
Farr, J. G.	"	Skull creek	1.7	50
Claustre, J.	"	Piapot creek	0.4	62
Dixon Brothers	"	Maple creek	5.7	695
Wallace, A. T.	"	Piapot creek	1.0	40
Cumberland, A.	"	"	0.3	50
Marsh, Greeley, et al.	"	Maple & Belanger creeks	6.0	330
Glennie, Lloyd, et al.	"	Bear creek	4.5	740
Lloyd, A.	"	"	0.2	30
Indian Department	Ottawa	Bow river	8.5	2200
Shaw, Mrs. Helen	Calgary	Fish creek	0.2	18
Godsal, F. W.	Pincher Creek	Old Man river	0.8	280
Alberta Rancho Co.	"	Pincher creek	1.1	270
Wolf, J. W.	Cardston	Snake creek	1.7	216
Hansen, N.	"	St. Mary river	1.7	237
Howe, S.	Lineham	Macabee creek	1.7	252
Ross & McLean	Livingstone	Ross creek	2.7	480
Wallace, R. A.	High River	High river	2.2	201
Oxarart, Estate of M.	Maple Creek	Cottonwood creek and a spring	1.0	405
Johnson, E.	Priddis	Springs	1.7	300
Cyr, Cyr & Pelletier	Pincher Creek	Stead creek	1.5	600
Jones & Smart	Saskatch'n L'd'g	Two springs	0.7	200
Morgan, William	Coutts	Half-breed creek	2.0	600
Macleod, N. T.	Lethbridge	Old Man river	1.3	100
Owens, John	Pine Creek	A lake	2.4	82
Sibbald, H.	Jumping Pound	Jumping Pound creek	1.1	150
Cross, A. E.	Calgary	Dry Timber and Rancho creeks	4.2	122
Thibaudeau, J. B.	Pincher Creek	Indian Farm creek	1.1	200
New Oxley Rancho Co.	New Oxley	Kootenai river	2.7	1850
Hunter, J. & J. & W.	Calgary	Fish creek	1.2	168
Indian Department	Ottawa	Old Man river	3.7	400
Furman, Salt & Salt	Cardston	Boundary creek	1.6	350
Schmid, Henry	Lineham	Sullivan creek	1.1	130
Lyndon, C. A. & W. A.	Lyndon	Trout creek	1.7	160
Little Bow Cattle Co.	High River	Mosquito creek	3.2	360
Robertson, T. W.	"	High river	4.3	605
Kemmis, John	Livingstone	Todd creek	1.7	50
Sheepy, Joseph	Calgary	Impounding dam		59
Spalding, C.	High River	High river	1.2	315
Pollock, D. H.	Maple Creek	Swift Current creek	1.0	640
Sexsmith J. L.	High River	Little Bow river	2.2	170

SCHEDULE OF IRRIGATION DITCHES CONSTRUCTED AND IN OPERATION UNDER PROVISIONS OF THE IRRIGATION ACT.—*Continued.*

OWNER OF DITCH OR CANAL —NAME.	ADDRESS.	STREAM FROM WHICH WATER IS DIVERTED.	LENGTH OF DITCH OR CANAL, MILES	AREA IRRIGATED.
Lauder, James.....	Craven.....	Qu'Appelle river.....	2.0	340
Cowan R. W.....	Cochrane.....	A spring creek.....	0.2	23
Armour, Hugh.....	Regina.....	Qu'Appelle river.....	0.5	450
Canadian Land & Rancho Co.	Crane Lake.....	Rush Lake creek.....	2.5	777
Lawson, H. C.....	Kennell.....	Qu'Appelle river.....	0.6	320
McDougall, Donald.....	Longlaketon.....	".....	0.5	130
Lambert, W. A.....	Kennell.....	".....	0.3	220
Alberta Irrigation Co.....	Lethbridge.....	St. Mary's river.....	58.5	500000
Bourassa, E.....	Battleford.....	Roundhill creek.....	0.5	138
Daudelin, J.....	".....	".....	0.5	91
Lajoie, S.....	".....	Jackfish creek.....	0.5	97
Couture, H.....	".....	".....	0.5	140
Gagne, Jules.....	".....	A creek in Tp. 48-17-3.....	0.5	93
Pomerleau, J. N.....	".....	Jackfish creek.....	0.5	80

SCHEDULE OF WATER RIGHTS GRANTED UNDER IRRIGATION ACT FOR DOMESTIC OR OTHER PURPOSES.

NAME OF APPLICANT.	ADDRESS.	CHARACTER OF RIGHT.	SOURCE OF SUPPLY.
Shaw, Kinnaird & Co.....	Calgary.....	To operate woollen mill	Fish creek
Hull, W. R.....	".....	To operate tannery...	Elbow river
Canadian Pacific Ry. Co.	Montreal...	For water tank.....	Moose Jaw creek
"	"	".....	Swift Current creek
"	"	".....	".....
"	"	".....	Bear creek
"	"	".....	Ross creek
"	"	".....	South Saskatchewan river
"	"	".....	Bow river
"	"	".....	Elbow river
"	"	".....	Bow river
"	"	".....	".....
"	"	".....	Forty mile creek
"	"	".....	Bow river
"	"	".....	North Antler creek
"	"	".....	Moose Mountain creek
"	"	".....	Souris river
"	"	".....	".....
"	"	".....	Boggy creek
"	"	".....	South Saskatchewan river
"	"	".....	McFarland creek
"	"	".....	Seven Persons coulee
"	"	".....	Belly river
"	"	".....	Battle river
Alberta Ry. & Coal Co.	Lethbridge.	Use of railway comp'y and town of Leth- bridge.....	Belly river
"	"	For water tanks.....	Milk river
Calgary Gas & Water Works Co.....	Calgary.....	Calgary water works..	Bow river
Calgary Water Power Co.	"	Power purposes.....	"
Eau Claire Lumber Co...	"	Domestic.....	"
Card & Hammer.....	Cardston...	Domestic and power..	Lee Creek
Lineham, John.....	Okotoks...	For mill pond.....	Sheep creek
McLaren, P.....	Macleod....	For mill pond and power	Mill creek

SCHEDULE OF WATER RIGHTS GRANTED UNDER IRRIGATION ACT
FOR DOMESTIC OR OTHER PURPOSES.—*Continued.*

NAME OF APPLICANT.	ADDRESS.	CHARACTER OF RIGHT.	SOURCE OF SUPPLY.
McLaren, P	Macleod....	For mill pond	Old Man river
Gardiner, C. W. E.	"	Domestic	Spring in Tp. 9-28-4
Indian Department	Ottawa.....	Power purposes.....	Battle river
"	"	"	Belly river
North-West Government.	Regina.....	Domestic and stock- watering purposes ..	Creek in Tp. 44-27-2
"	"	"	Wascana creek
"	"	"	Trib. of Qu'Appelle river Tp. 19-13-2
"	"	"	Trib. Qu'Appelle river 28, 29-19-14-2
"	"	"	Coulee 9-16-17-2
"	"	"	Branch of Thunder creek
"	"	"	Boggy creek
"	"	"	Coulee 12-20-20-2
"	"	"	Coulee 22-18-27-2
"	"	"	Red Fox creek
"	"	"	Coulee 32, 33-16-16-2
"	"	"	Coulee 35, 36-19-16-2
"	"	"	Red Fox creek
"	"	"	Coulee 15, 16-19-11-2
"	"	"	Trib. of Qu'Appelle river 2-21-12-2
"	"	"	Trib. of Qu'Appelle river 33-20-14-2
"	"	"	Branch of Thunder creek 23, 26-17-28-2
"	"	"	Coulee, 19, 20-19-13-2
"	"	"	Trib. Qu'Appelle river 23, 26-21-12-2
"	"	"	Trib. Qu'Appelle river, 2-20-12-2
"	"	"	Spring creek, 15, 16-20-12- 2
"	"	"	Coulee, 4-19 & 32-18, 25-2
"	"	"	Pheasant creek
"	"	"	Trib. Qu'Appelle river, 9, 10-16-10-2
"	"	"	Pheasant creek
"	"	"	Trib. Qu'Appelle river, 33, 34-15-9-2
"	"	"	Coulee, 20-14-4-2
"	"	"	Branch of Wascana creek
"	"	"	Cottonwood creek
"	"	"	Branch of Many Bone creek
"	"	"	Red Fox creek
"	"	"	Trib. Qu'Appelle river, 19, 30-19-12-2
"	"	"	Branch of Thunder creek
"	"	"	Coulee, 20, 21-19-26-2
"	"	"	" 31-17-26-2
"	"	"	" 12, 13-29-15-2
"	"	"	Trib. Qu'Appelle river, 11, 12-19-15-2
"	"	"	Coulee, 20, 29-16-15-2
"	"	"	Trib. Qu'Appelle river, 7- 19-14-2 & 12-19-15,2
"	"	"	Pipestone creek
"	"	"	Coulee, 24, 25-20-14-2
"	"	"	Trib. Qu'Appelle river, 2- 20-14-2
"	"	"	Trib. Qu'Appelle river, 14, 15-19-14-2

SCHEDULE OF WATER RIGHTS GRANTED UNDER IRRIGATION ACT
FOR DOMESTIC OR OTHER PURPOSES.—*Continued.*

NAME OF APPLICANT.	ADDRESS.	CHARACTER OF RIGHT.	SOURCE OF SUPPLY.
North-West Government.	Regina . . .	Domestic and stock-	
		watering purposes . .	Trib. Qu'Appelle river, 19-19-14-2
"	"	"	Beaver Hills creek
"	"	"	Coulee, 21, 28-19-15-2
"	"	"	Creek trib. Qu'Appelle river, 24-19-13-2
"	"	"	Trib. Qu'Appelle river, 19-19-12-2
"	"	"	Ravine trib. Qu'Appelle river, 35-18-12-2
"	"	"	Ravine trib. Qu'Appelle river, 16, 17-20-7-2
"	"	"	Ravine trib. Assiniboine river, 23-15-30-1
"	"	"	Beaver creek
"	"	"	Ravine trib. Big Cut Arm creek
"	"	"	Ravine trib. Qu'Appelle river, 3-17-2-2
"	"	"	Ravine trib. Qu'Appelle river, 25-15-30-1
"	"	"	Little Whitesand river
"	"	"	Insinger creek
"	"	"	Boggy creek
"	"	"	Creek trib. Qu'Appelle river, 19-19-12-2
"	"	"	Nose creek
"	"	"	Trib. Moose Jaw creek
"	"	"	Trib. Qu'Appelle river, 31, 36-7-12, 13-2
"	"	"	Qu'Appelle river
"	"	"	From High River to Little Bow river
Muni'lty of Indian Head.	Indian Head	"	Squirrel Hills Springs
Spring-Rice, G. & B.	Pense	Domestic	Cottonwood creek
"	"	"	"
Canadian Pacific Ry. Co.	Montreal . . .	For water tank	Wolf creek
"	"	"	Pilot Butte creek
"	"	"	Boggy creek
"	"	"	Dewdney creek
"	"	"	Cottonwood creek
Clancy, J. W. W.	Regina	Domestic	A spring creek
Clancy, William	"	"	Wascana creek
Bourne, R.	"	"	"

The subject of irrigation is one of the matters specially excepted from the powers of the Legislative Assembly of the Territories by The North West Territories Act, but in the year 1894 it became evident that some Territorial enactment was needed to enable the construction of irrigation works to be undertaken by municipal effort. To meet this necessity The Irrigation Ordinance was passed during the session of 1894 and the question which arose as to the power of the Assembly to enact this Ordinance was subsequently set at rest by its confirmation by the Parliament of Canada.

The Irrigation District Ordinance as at first passed proved to be a somewhat cumbersome and unworkable Ordinance, and it was therefore

amended and consolidated at the last session so as to simplify many of its provisions. The new Ordinance will, it is thought, permit of the organisation and operation of irrigation districts on a simple and satisfactory basis and it is hoped that in numerous districts the residents will avail themselves of its provisions to undertake irrigation development as a municipal work. There is little doubt that well considered and properly constructed irrigation canals can be most satisfactorily operated as municipal undertakings under the present provisions of the Ordinance. The Ordinance has been framed to avoid, if possible, many of the difficulties which have characterised similar undertakings in the irrigable States and Territories to the south of us, and in its provisions regarding the collection of overdue taxes from irrigated areas it practically ensures a government guarantee of the interest on the debentures sold by the district for the construction of the necessary works.

So far only one irrigation district has been formed. It comprises an extensive area between the Bow and Elbow rivers to the west of Calgary, and it is to be supplied with water from the Jumping Pound river, a tributary of the Bow river, which bounds the district on the west. This district, although organised almost immediately after The Irrigation Districts Ordinance was first passed, has not as yet proceeded with the construction of the canal for the supply of water to the irrigable area within the district, the delay having resulted from internal troubles, but as the scheme is a particularly good one, and as the completion of the proposed works will bring a large area under irrigation, it is hoped they will be able to proceed with their construction without further delay.

The general question of irrigation, and the record of water rights for irrigation as well as other purposes, is provided for under an Act of Parliament intituled The North-West Irrigation Act. The Territorial administration of this Act was, up to the beginning of last year, carried out through an office of the Department of the Interior at Calgary, but owing to representations made to the Hon. the Minister of the Interior it was decided to centralise the administration of the Act here, and this change was brought into force by an amendment of the Act passed at the last session of Parliament, under which all applications for water rights are now recorded and dealt with here. The business of the irrigation branch of the department has been summarised in the earlier pages of this report, and it is therefore only necessary to add that the work of the administration of the Act is going on smoothly and promptly and the change above referred to has proved a wise one.

The question of irrigation is such a many sided one that it can only be referred to in the briefest terms in a report of this character, but the general reports on irrigation and irrigation surveys issued annually through the Department of the Interior will be found to deal with the subject exhaustively.

STEAM BOILERS ORDINANCE.

This Ordinance is one of the eight Ordinances the administration of which is specially delegated to this department. The Ordinance was first passed at the session of 1897 with a proviso that it should be brought into force by proclamation. This proclamation was issued in September of that year as it was found that certain boilers in the Territories were being operated in such a manner as to endanger human life. After the Ordinance was put in force it was found that many difficulties arose in

connection with its administration and it was therefore largely amended at the last session of the Legislative Assembly so as to make it more complete and workable.

Up to the time of the passing of this Ordinance there was no Territorial enactment relating to the operation of steam boilers or the granting of certificates to those having charge of them or the engines in connection therewith. That such an enactment was necessary is proved from the facts connected with one or two boiler explosions which have occurred, attended with loss of life, and also by the results of inspections so far made of boilers in operation, several instances having come to light where boilers were being operated with a working pressure much beyond what they were capable of carrying with safety, the safety valves being loaded with extra weights to enable this to be done.

We have also found that a very small proportion of the men operating boilers have had the necessary training and experience to entitle them to certificates of qualification as engineers; and that more serious boiler explosions accompanied by loss of life have not occurred, would seem, from investigations so far completed, to have been largely a matter of good luck if one is to judge by the methods of operating boilers which have been noted in some instances by the inspectors.

Under the Ordinance, as amended at the last session, provision was made to grant certificates of qualification as engineers to all men operating boilers and engines in the Territories who held proofs of having qualified as engineers in any part of the Empire or of the United States, and also to issue provisional certificates to the large number of men operating boilers in the Territories who had no previous experience but had acquired some knowledge of the subject from their experience here. The provisional certificates are issued for one year, within which period the holder is expected to qualify himself so as to pass an examination before the inspector for a final certificate of qualification.

The accompanying schedule shows the final and provisional certificates issued up to the end of the year.

SCHEDULE OF ENGINEERS' CERTIFICATES ISSUED IN ACCORDANCE WITH THE PROVISIONS OF THE STEAM BOILERS ORDINANCE.

FINAL CERTIFICATES.

CERTIFICATE No.	NAME.	P. O. ADDRESS.
1.....	John F. McNabb	Fort Qu'Appelle.
2.....	William Cross	Calgary.
3.....	Robert F. Liston	Battleford. ⁴
4.....	William J. Holden	Indian Head.
5.....	Cleophas Turgeon	Edmonton.
6.....	William Mayhew	Clifton. <small>DEER</small>
7.....	George Cook	Regina. <small>DEER</small>
8.....	George R. Taylor	South Edmonton.
9.....	Thomas Kirkland	Yorkton.
10.....	William N. Carment	Kamsack.
11.....	David Caithness	Indian Head.
12.....	Dan Evans	Edmonton.
13.....	George Collison	Coalfields.
14.....	John Scott	Lethbridge.

SCHEDULE OF ENGINEERS' CERTIFICATES ISSUED IN ACCORDANCE
WITH THE PROVISIONS OF THE STEAM BOILERS ORDINANCE.—
Continued.

PROVISIONAL CERTIFICATES.

CERTIFICATE NO.	NAME.	P. O. ADDRESS.
1.....	Angus T. Currie.....	Indian Head
2.....	Jas. H. Davidson.....	Wolseley
3.....	Sydney T. Hubbard.....	Edmonton
4.....	William Haley.....	Wolseley
5.....	Carl F. Krienke.....	Ellisboro
6.....	Gregor D. Cameron.....	Fleming
7.....	William Ferguson.....	Moffatt
8.....	George Pateman.....	Welwyn
9.....	John Keith.....	Whitewood
10.....	Thomas Fletcher.....	Hill Farm
11.....	R. D. Thompson.....	Wolseley
12.....	Alex. B. Russell.....	Regina
13.....	J. P. Minhinnick.....	Sumner
14.....	Albert Krienke.....	Ellisboro
15.....	T. B. Stapeley.....	Edmonton
16.....	W. H. Fyke.....	Moosomin
17.....	John Irvine.....	Declare, Man.
18.....	Edward Brears.....	Clumber
19.....	Charles Ritchie.....	Cut Arm
20.....	James Donald.....	Moosomin
21.....	James Percy.....	"
22.....	Isaac Ingram.....	Leduc
23.....	Albert Holden.....	Indian Head
24.....	James Lang.....	Okotoks
25.....	William H. James.....	Whitewood
26.....	Samuel R. Barber.....	Wolseley
27.....	Ernest M. Payzant.....	St. Albert
28.....	W. J. Osment.....	Indian Head
29.....	Albert Edwd. Dickson.....	Lumsden
30.....	William J. Carefoot.....	Moosomin
31.....	George H. Bawtinheimer.....	Red Deer
32.....	Samuel E. Minty.....	Ferndale
33.....	O. C. Millham.....	Hazelcliffe
34.....	Saml. B. Copthorne.....	Wide Awake
35.....	Thomas J. Hamill.....	Whitewood
36.....	James A. Vidal.....	Katepwe
37.....	Wallace E. Peirce.....	Fort Saskatchewan
38.....	Robert More.....	Bredenbury
39.....	William J. Stanley.....	Ferndale
40.....	Alexander Fletcher.....	Moose Jaw
41.....	Herbert F. Boyce.....	Qu'Appelle Station
42.....	Wesley Cripps.....	Indian Head
43.....	Charles Stephens.....	Saltoun
44.....	Charles K. Thompson.....	Ellisboro
45.....	Philip E. Anderson.....	Fleming
46.....	George Lee.....	Wolseley
47.....	William Common.....	Hazelcliffe
48.....	George Parker.....	Moosomin
49.....	Jas. McKernan.....	South Edmonton
50.....	Hugh Thompson.....	Moose Jaw
51.....	Edward Roberts.....	Wapella
52.....	James Fergus.....	Yorkton
53.....	Richard Hoyer.....	Edenwald
54.....	Carl Koch.....	Balgonie
55.....	James Gaddes.....	Kenlis
56.....	John Robinson.....	Namao
57.....	John Bergman.....	Churchbridge
58.....	Charles F. Zimmerman.....	Riversdale
59.....	William Dixon.....	Sintaluta
60.....	Thomas Johnstone.....	Qu'Appelle Station

SCHEDULE OF ENGINEERS' CERTIFICATES ISSUED IN ACCORDANCE
WITH THE PROVISIONS OF THE STEAM BOILERS ORDINANCE.—

Continued.

PROVISIONAL CERTIFICATES.—*Continued.*

CERTIFICATE NO.	NAME.	P. O. ADDRESS.
61.....	David Mulberry	Spy Hill
62.....	John Bowles	Moose Jaw
63.....	Samuel B. Sanders	Grenfell
64.....	Frank Amas.....	Qu'Appelle Station
65.....	W. E. Powley.....	Edgeley
66.....	Richard Hargest	"
67.....	Frank W. Carscadden.....	Edmonton
68.....	Robert B. Aldous	Lorlie
69.....	John A. C. Cameron	Edmonton
70.....	Peter Blatchford.....	"
71.....	Frank Brown	Indian Head
72.....	Emil Ellerman.....	Hyde
73.....	George T. Mitchell	Grenfell
74.....	Allen G. Hawkes	Broadview
75.....	John S. Pendency.....	Halcro
76.....	William Kearns	Qu'Appelle
77.....	John A. Gilroy	Sintaluta
78.....	Thomas Galbraith	Indian Head
79.....	Thomas Boyes	Indian Head
80.....	George Green	Boharm
81.....	John T. Partridge.....	Sintaluta
82.....	Thomas S. Hiscox	Regina
83.....	James Fotheringham	Grenfell
84.....	Joseph Bergeron	Fort Saskatchewan
85.....	James C. Dillon	Fort Qu'Appelle
86.....	C. Steinburg	Moosomin
87.....	William More	Qu'Appelle Station
88.....	Samuel O. Holden	Indian Head
89.....	Gavin G. Smith	Battleford
90.....	Albert Dash	Hillesden
91.....	Samuel Getty	Moose Jaw
92.....	William Cross	Crescent Lake
93.....	Andrew G. Hogg	Carnoustie
94.....	Thomas Cumming	Whitewood
95.....	John Nesbitt	Moose Jaw
96.....	M. W. Shaw	Midnapore
97.....	John E. Brown.....	Spy Hill
98.....	J. W. Stephenson.....	Moose Jaw
99.....	T. P. Parcels	Red Deer
100.....	Peter Bolduc	South Edmonton
101.....	John King	Regina
102.....	James W. Smith	Moose Jaw
103.....	N. F. Smith	Moose Jaw
104.....	William Rigby	Indian Head
105.....	J. J. Christenson	Poplar Lake
106.....	Finlay McDonell	St. Albert
107.....	Fred. J. Leggatt	Kenlis
108.....	Duncan McEwan.....	Regina
109.....	L. H. Ffolliott	Grenfell
110.....	Jacob Langhausen.....	Fort Saskatchewan
111.....	J. Alphonse Prince.....	Battleford
112.....	James Badley	Pense
113.....	John Muth	Ebenezer
114.....	Thomas A. Waterfield.....	Yorkton
115.....	Jesse B. Walker	Lethbridge
116.....	Richard W. Reed	"
117.....	Henry F. Perry	Grenfell
118.....	Richard P. Ottewell	Clover Bar
119.....	Charles Shingler	Grenfell
120.....	Charles Knight.....	De Winton

SCHEDULE OF ENGINEERS' CERTIFICATES ISSUED IN ACCORDANCE
WITH THE PROVISIONS OF THE STEAM BOILERS ORDINANCE.—
Continued.

PROVISIONAL CERTIFICATES.—*Continued.*

CERTIFICATE NO.	NAME.	P. O. ADDRESS.
121	Thomas H. Stewart	South Edmonton
122	J. A. Sutherland	Broadview
123	Peter P. Neufeldt	Rosthern
124	Alexander Shackleton	Fort Saskatchewan
125	John York Shaw	Midnapore
126	Alexander Duhaime	Battleford
127	John G. Watson	Calgary
128	Haldon Terrill	Saltoun
129	Edward F. Codd	Macleod
130	Herbert S. Beck	Midnapore
131	John William Hicklin	Calgary
132	Charles Fothergill	Cannington Manor
133	William H. Griffiths	Anthracite
134	John Calling	Anthracite
135	Harry W. Evans	Anthracite
136	W. F. McNeill	Canmore
137	Watt Cooper	"
138	Joseph Bellisle	"
139	William Kerr	Lethbridge
140	Archibald McLean	"
141	Thomas Foreson	Wetaskiwin
142	George Stafford	Lethbridge
143	Frank Dennis	Vegreville
144	Henry Mossip	Lethbridge
145	John D. Macleod	Edmonton
146	George Parslow	"
147	Charles Godson	Pense
148	Henry Hillis	Lethbridge

To carry out the provisions of the Ordinance two inspectors of steam boilers were appointed in 1898, Mr. Dan Evans, of Edmonton, and Mr. W. C. Wilcox, of Wapella, being selected for these positions. Both these gentlemen are thoroughly qualified engineers and have been actively at work since their appointment in completing boiler inspections. Up to the end of the year 48 boilers were inspected and a great deal of valuable information collected as to the number of boilers in the Territories. The inspectors have also been employed in assisting me to get the questions for examination in shape and in preparing certain regulations, which the Ordinance prescribes are to be promulgated from time to time upon the authority of the Lieutenant Governor in Council, regarding general questions not specially dealt with in the Ordinance.

From present information available we have been able to schedule some four hundred boilers now being used in the Territories. Of this number probably two-thirds are boilers of threshing engines, the remainder being the usual stationery boilers used in mills, factories, elevators, creameries, &c. The number of threshing engines is increasing very rapidly and in a very short time the inspection of boilers of this class will require the full time of one of the inspectors. It is very important that threshing engine boilers should be inspected annually. These boilers are in many cases operated very carelessly, are not properly looked after or sheltered when not in operation, and explosions of such boilers when

in operation is sure to result in serious loss of life owing to the large number of men employed about them at that time.

Referring to the desirability of having boilers inspected and the granting of certificates of qualification to engineers operating the same it will, I assume, be granted that any question involving danger to human life should be dealt with by the Government under well defined and strictly enforced regulations, but as bearing directly on the subject, the opinions of engineers in the older provinces regarding this matter, as illustrated by the following resolution passed at a late meeting of one of the lodges of the Canadian Association of Stationery Engineers in Toronto, is worthy of note:

"That the members of Toronto No. 1, C.A.S.E., deeply deplore the loss of life and personal injury to the innocent victims who suffered at the recent boiler explosion at the ice house in the east end of the city; and as a body of engineers wish to place ourselves upon record as concurring with the verdict of the coroner's jury which clearly set out the fact that the man in charge was incompetent; and that all boilers should be under the charge of practical engineers who have certificates, and that each boiler be inspected yearly by some competent person."

THE VILLAGE ORDINANCE.

The administration of The Village Ordinance was delegated to this department at the last session of the Legislative Assembly, the Ordinance having been largely amended and extended at that session.

Previous to the amendment of the Ordinance and the transfer of its administration to this department the Ordinance relating to Villages and Unincorporated Towns had been administered through the office of the Territorial Secretary, and nine villages had been organised. Since the amendment of the Ordinance an additional eleven villages have been organised, making the total number now organised and in operation twenty, as shown by the following schedule:

SCHEDULE OF VILLAGES IN THE TERRITORIES WITH YEAR OF ORGANISATION AND NAMES OF PRESENT OVERSEERS.

NAME OF VILLAGE.	LOCATION.				WHEN ORGANISED.	NAME OF OVERSEER.
	Sec.	Tp.	Rg.	M.		
Alameda.....	14	3	2	2	1898.....	Fred. Brodie Gibson.
Battleford.....	31	43	16	3	1898.....	John Henry Storer.
Broadview.....	25	16	5	2	1898.....	Angus McLeod.
Cardston.....	9	3	25	4	1898.....	J. A. Hammer.
Duck Lake.....	4	44	2	3	1898.....	William J. Campbell.
Flening.....	3	13	30	1	1896.....	George J. Jupp.
Gainsboro.....	33	2	30	1	1894.....	A. M. Reynolds.
Gleichen.....	13	22	23	4	1899.....	J. J. Marshall.
Grenfell.....	8	17	7	2	1894.....	J. D. McDonell.
Lacombe.....	19	40	26	4	1896.....	I. N. Burdick.
Lumsden.....	33	19	21	2	1898.....	Andrew Blair.
Maple Creek.....	15	11	26	3	1896.....	J. J. English.
Olds.....	32	32	1	5	1896.....	George Cloakey.
Pincher Creek.....	23	6	30	4	1898.....	A. R. Dempster.
Qu'Appelle (Fort).....	7	21	13	2	1898.....	S. C. Elkington.
Red Deer.....	17	38	27	4	1894.....	George W. Greene.
Rosthern.....	35	42	3	3	1898.....	Isbrand D. Fehr.
Saltcoats.....	1	24	2	2	1894.....	W. B. Smithett.
Wapella.....	9	15	33	1	1898.....	George E. Nugent
Yorkton.....	35	25	4	2	1894.....	W. L. D. Kilborn.

The Village Ordinance as at present framed provides very simple and efficient machinery for the conduct of the affairs of villages, but as the enforcement of its provisions regarding the organisation of villages is not compulsory, several places which should be organised have petitioned against the steps taken towards their organisation.

This action is, I think, largely due to ignorance of the provisions of the Ordinance, the prevalent idea being that organisation would entail high taxation and extensive municipal machinery. As a result of this feeling places like Wetaskiwin, Innisfail, High River, Canmore, Fort Saskatchewan and Okotoks, some of which are almost large enough to be designated as towns, have refused to avail themselves of the opportunity offered them for village organisation and are content to remain as portions of the local improvement districts comprising the townships within which these places are situated.

It is hardly necessary to point out that the provisions of The Local Improvement Ordinance are quite unsuited to villages or towns. That Ordinance is specially framed to meet rural conditions, and the completion of many of the works required in village development cannot be undertaken under The Local Improvement Ordinance. Among these may be mentioned the safe-guarding of public health, the guarding against fire, the providing of a water supply, the licensing of hawkers, and many other features that require attention when the settlement is such as is met with in village communities.

The system of taxation provided for under The Local Improvement Ordinance is also quite unsuited to villages. Under that Ordinance one quarter section of land is made the basis of taxation, and as a consequence the holders of village lots up to 160 acres in area only pay the same tax as the person owning one lot. There is also the further difficulty that under The Local Improvement Ordinance the majority of the residents fix the location and character of each year's work, and in districts containing places which should be organised as villages the population in these places of course out-number the rural population in the district, and are thus able to dictate not only as to the location and character of the season's work but also with reference to the election of the overseer of the district. This condition of affairs is not fair to the local improvement districts containing places which should be organised as villages under The Village Ordinance.

CONCLUSION.

As was intimated in the opening pages of this report, it was expected that considerable space would be required to discuss intelligently many of the questions dealt with through the Department of Public Works. The references herein contained to many of these subjects have been made as brief as possible, but the limits of the report have grown somewhat beyond those originally contemplated. The importance of full discussion and information regarding many of these questions, particularly in the inception of the departmental administration relating thereto will, however, probably be accepted as a reasonable excuse for the somewhat voluminous character of the report.

I have the honour to be, Sir,

Your obedient servant,

J. S. DENNIS,

Deputy Commissioner.

Department of Public Works,
Regina, Assiniboia,
January 2nd, 1899.

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